Advanced HIV Disease:
How to diagnose Opportunistic Infections

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PEPFAR
U.S. President's Emergency Plan for AIDS Relief

2030 NDP

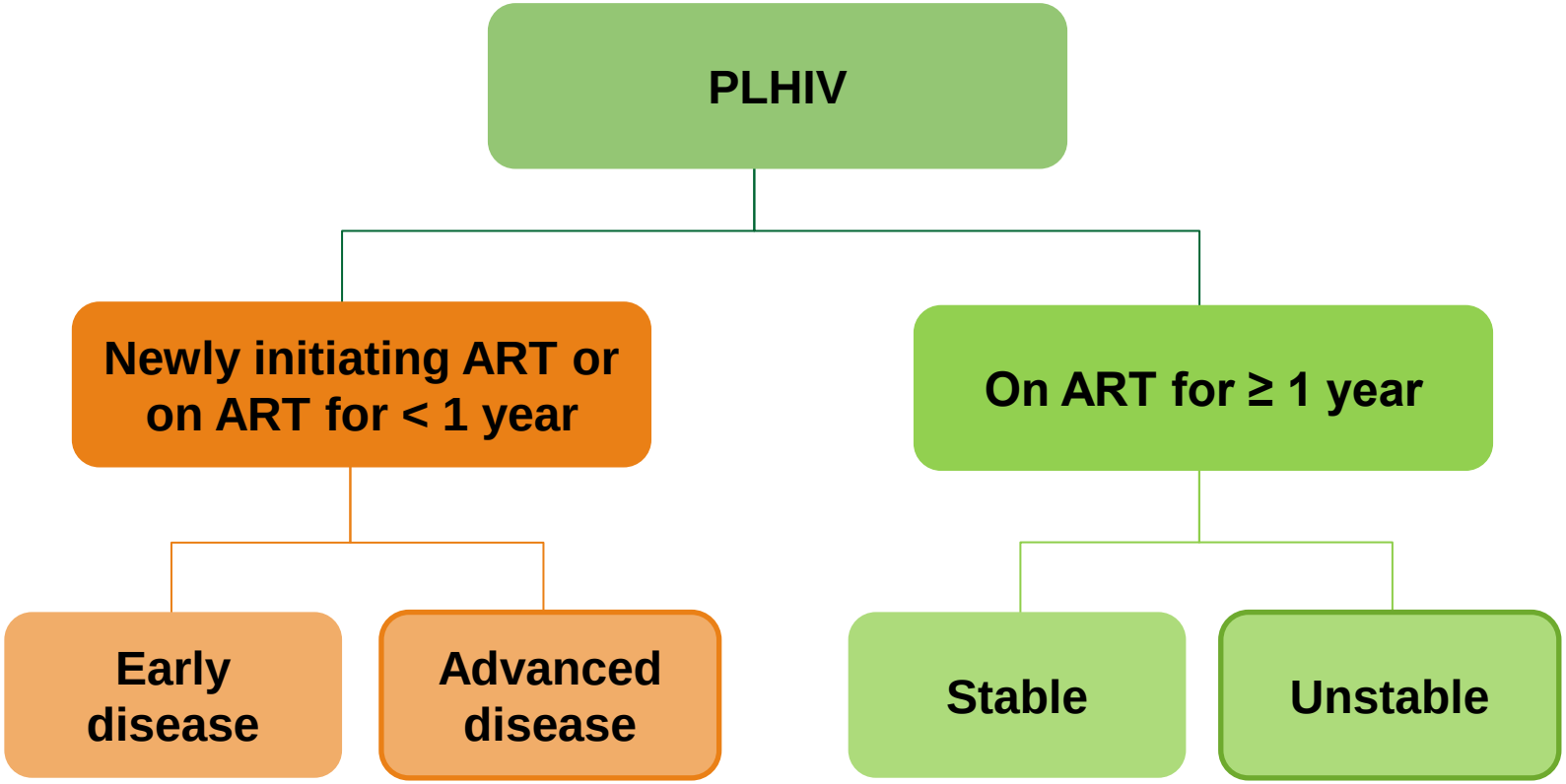
2030 NDP

Outline

The following will be covered

- PLHIV (Early vs Advanced; Stable vs Unstable)
- Advanced HIV Disease (AHD)
- Common Opportunistic Infections in AHD (Systemic Approach: CNS, GIT, Respiratory, Skin)

Patient Classification for Differentiated Care



Defining High-Risk Patients

New to ART / Advanced Disease	On ART for > 1 year / Unstable
Newly initiating ART or on ART for < 1 year and	On ART for > 1 year and any of the following:
CD4 < 200/mm^3 and / or	Not virally suppressed*
WHO stage III / IV	CD4 < 200/mm^3
	Active opportunistic infection, including TB
	Non-adherent with ART**
	Substance use
	Comorbid condition(s) requiring frequent follow up

* Not virally suppressed = most recent VL > 1,000 and/or no VL in the past 6 months

** Non-adherent = 2+ missed doses a month for patients on once-daily regimens, 4+ missed doses a month for patients on twice-daily regimens; and/or misses drug pickups

Advanced HIV Disease (AHD)

- For adults, adolescents, and children children aged five years and older, advanced HIV disease (AHD) is defined as a
  - **CD4 cell count <200 cells/mm3** or
  - **WHO clinical stage 3 or 4 event**

- All children living with HIV **younger than five years** should be considered as having AHD unless they have been receiving ART for longer than one year and are clinically stable on ART

WHO Clinical Staging

Stage 1 Asymptomatic	Stage 2 Mild disease	Stage 3 Moderate disease	Stage 4 Severe disease (AIDS)
No symptoms	Wt. loss>5–10%	Wt. loss>10%	HIV wasting syndrome
	Sore or cracks around the lip	Oral thrush	Esophageal thrush
Or only persistent generalized lymphadenopathy	Seborrhea	Oral hairy	More than 1 month: Herpes simplex ulceration
	Prurigo	Leukoplakia	Lymphoma
	Herpes zoster	More than 1 month	Kaposi sarcoma
	Recurrent URTI	• Diarrhea	Invasive cervicalcancer
	Recurrent mouth ulcer	• Unexplained fever	Pneumocystic pneumonia
		• Severe bacterial infection	Extrapulmonary TB
		• Pneumonia	Cryptococcal meningitis
		• Muscle infection	Toxoplasma brain abscess
		Pulmonary TB	Visceral leishmaniasis
		TB lymphadenopathy	HIV encephalopathy
		Acute necrotizing ulcerative gingivitis	

HIV: Human immunodeficiency virus, AIDS: Acquired immunodeficiency syndrome

Patient Evaluation

- **Triage and identify seriously ill patients**

- **Who needs to be stabilized before additional history is taken?**
- Danger signs & Severity
- **Quick or “working history questions” :**
- **SAMPLE questions as you work on the patient**
  - Signs and Symptoms
  - Allergies
  - Medication
  - Past Medical History and Pregnancy
  - Last Meal
  - Event (What happened?)

Patient Evaluation

- **How is the assessment of a stable (talking and alert) patient done?**
- **Primary Presenting Problem (PPP) & History of PP**
- **Systemic enquiry (Integumentary to Haemotological or Skin to Blood Symptoms)**
- Detailed history of site, onset, characteristics, radiation, alleviating factors, timing, exacerbating factors, and severity of symptoms/signs
- **Past Traditional, Herbal, Immunization, Preventative, Medical and Surgical history**
- Sexual and Reproductive Health History (gender-based rights and gender orientation, pregnancy, family planning, contraceptives, pap smear, prostate checks etc.)
- Key or Priority Population related history (Paediatric, Young Males/Females, Adult Males/Females, Elderly, People Living with Disabilities, Key Population Groups)
- Allergies review (food, environmental, and medication)
- **Family/Contact History (Communicable and Non-Communicable)**
- **Psycho-Social History (Residential, Exposure, Habits, Adherence, and Mental Health)**
- Environmental, Occupational, & Travel History

Patient Evaluation

- **The Main Objective for AHD**
- **Incorporate program-related elements into routine history taking, vitals assessment, and examination**

- **DRAW a picture**

- Danger Signs & Severity
- Reason for Consult (HIV/TB/OIs/NCDs related, unrelated, or complications)
- ART Details (Newly Diagnosed vs. Advanced HIV; Stable vs Unstable)
- WHO Staging

William of Ockham

(Franciscan friar, 1287-1347)

Ockham's Razor

No more things should be presumed to exist than are absolutely necessary, i.e., the fewer assumptions an explanation of a phenomenon depends on, the better the explanation

Everything should be made as simple as possible, but not simpler

Albert Einstein

Case Reports > IDCases. 2018 Aug 8:13:e00437. doi: 10.1016/j.idcr.2018.e00437. eCollection 2018.

Occam's razor need not apply: Advanced HIV infection presenting with five simultaneous opportunistic infections and central nervous system lymphoma

Louis-Bassett Porter [1], Elena Kozakewich [1], Ryan Clouser [2], Colleen Kershaw [3], Andrew J Hale [2]

Affiliations + expand

PMID: 30128292 PMCID: PMC6097275 DOI: 10.1016/j.idcr.2018.e00437

Does Occam's Razor Even Apply in Severely Immunosuppressed Patients? A Case of a Patient With HIV/AIDS With Opportunistic Infections, Diffuse Large B-Cell Lymphoma, and Secondary Hemophagocytic Lymphohistiocytosis

P. Nauka[1], I. Konstantinidis[2]; [1]Pulmonary, Allergy, Sleep and Critical Care Medicine, University of Pittsburgh, Pittsburgh, PA, United States, [2]Division of Pulmonary, Allergy, and Critical Care Medicine, University of Pittsburgh Medical Center, Pittsburgh, PA, United States.

Ockham's razor is not so sharp

Mark A. Lewis, Kartik Agusala, and Yuval Raizen

▸ Author information ▸ Article notes ▸ Copyright and

Abstract

A 39-year-old male with newly diagnosed HIV had cavitary pneumonia initially attributed to *Pneumocystis jirovecii* but actually caused by *Rhodococcus equi.* After neurological deterioration, he was found to have intracerebral lesions caused by *Toxoplasma gondii.* This case underscores the inability to rely on the search for a unifying diagnosis (Ockham's Razor) in HIV-infected patients.

CASE REPORT

Think Hickam's Dictum not Occam's Razor in paediatric HIV

PDF

Felicity Goodyear-Smith [1], Mike Sharland [2], Simon Nadel [3]

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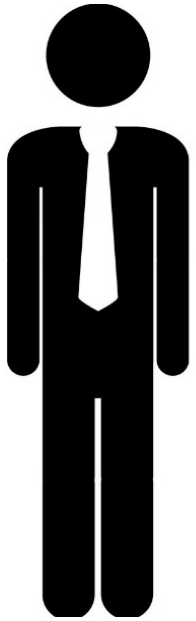
Summary

A 10-year-old girl with untreated congenital HIV developed acute sepsis to which she succumbed despite emergency treatment.

CASE STUDY



Introducing:
35 year old man

- Diagnosed with HIV three years ago
- ART-naive, CD4: 90 cells/uL
- Presents with
  - Headache for 10 days
  - Cough for 5 days
  - Loose stools for 2 weeks
  - Fever
  - Rash that has been there for a while

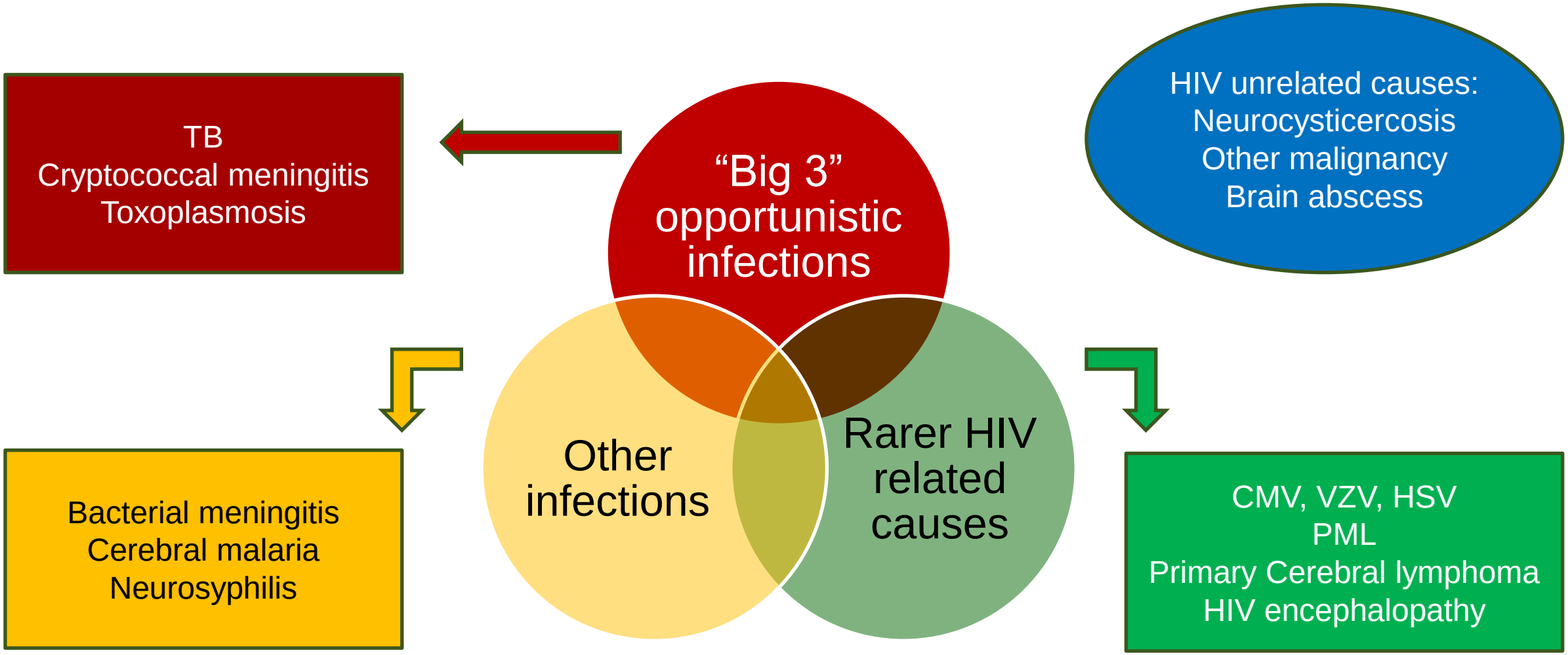
Let’s start with the headache….

4 groups of neurological problems:

Can occur in any combination

Altered mental state: Reduced consciousness, confusion, strange behaviour	Focal neurology: Hemiplegia, other paralysis, abnormal movements, sensory loss, cranial nerve abnormalities, headache	Meningism: Neck stiffness, photophobia, headache	Seizures

Neurological diseases in HIV



History taking: headache

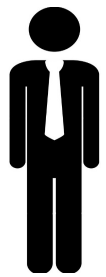
Onset	Duration	Nature	Severity
Location	Temporal	Aggravating	Relieving
Medication	Travel hx	Substance use	Comorbidities

Neurological examination

Level of consciousness	Cranial nerves	Motor system	Sensory
Reflexes	Coordination	Gait	Meningeal irritation

Acute vs Chronic meningitis

- **Typically, any 2 of: fever, headache, neck stiffness, and confusion**
- **Other features may include photophobia, seizures, rash**
- **Acute:**
  - Duration usually <7 days;
  - Medical emergency (do not delay antibiotics)
  - Often bacterial, but may also be viral (sometimes cryptococcal / TB)
- **Sub-acute or chronic:**
  - Duration usually ≥ 7 days
  - Less likely to be bacterial



Possible pathogens causing sub-acute / chronic meningitis

Possible pathogens causing sub-acute / chronic meningitis			
(Myco)bacterial	Fungal	Viral	Parasitic
Tuberculosis	Cryptococcosis	Herpes simplex (HSV)	Toxoplasmosis
Syphilis	Candida	Varicella Zoster (VZV)	Cysticercosis
Listeria	Aspergillus	Cytomegalovirus (CMV)	
	Mucormycosis	HIV	
	Histoplasmosis		

Poll:

Which of the following would be a contra-indication to doing a lumbar puncture?

A. **Glasgow Coma Scale 14/15**
B. **Known epileptic patient**
C. **Cranial nerve VI palsy**
D. **Left-sided hemi-paresis**

Indications for CT brain prior to lumbar puncture

- Coma or markedly decreased level of consciousness (Glasgow coma scale <10)
- Papilloedema
- Unexplained new focal neurological deficit, such as a hemiparesis or dysphasia
- Unexplained seizures
- Presence of a ventriculo-peritoneal shunt
- **Isolated cranial nerve palsies are not a contraindication to LP**, but caution is advised when co-existent with reduced level of consciousness

Testing the CSF

1. CSF opening pressure
2. Gram stain and bacterial culture
3. Protein, cell count, glucose
4. CrAg
5. Syphilis
6. TB-NAAT

7. Serum glucose

Interpretation of CSF results

AETIOLOGY	CELL COUNT	PROTEIN	GLUCOSE	MICROSCOPY	SPECIFIC TESTS
Bacterial	↑↑↑ Polymorphs	↑	↓	Gram stain – may be +ve	Antigen/PCR Culture
Cryptococcal	↑ Lymphocytes	↑	↔	India Ink – often +ve	CrAg; Fungal culture
TB	↑ Lymphocytes	↑↑	↓↓	ZN/fluorescent microscopy - rarely +ve	Xpert Ultra; TB culture
Viral	↑ Lymphocytes	↑	↔	–	Multiplex PCR

If the diagnosis is still unclear, consider…

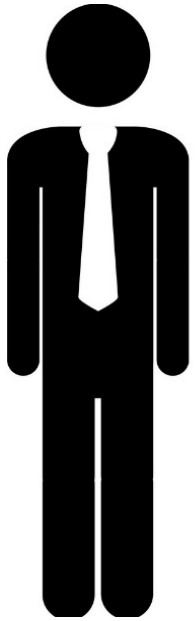
- **Further CSF testing:**
  - Mycobacterial culture
  - Viral PCRs (HSV, VZV, CMV, enterovirus)
  - Bacterial PCRs, including Listeria
- **Search for extra-neural TB**
- **Examine for rashes (suggestive of VZV or HSV)**
- **Consider malignancy / auto-immune diseases**
- **Review medication history**

If a CTB was done, showing a space occupying lesion…

Differential diagnosis
TB
Toxoplasmosis
Pyogenic abscess
Neurocysticercosis
Primary CNS lymphoma
Secondary brain tumour
Cryptococcoma
Nocardia
Syphilitic gumma

If a CTB was done, showing no pathognomonic signs…

Further investigations
CXR
CD4 and reflex CrAg
Toxoplasmosis serology
Syphilis serology
Search for extra-neural TB (TB-NAAT, LF-LAM, abdominal ultrasound)
LP if not contra-indicated (CrAg, TB-NAAT, TB culture, EBV, syphilis serology)



35 year old man

- Diagnosed with HIV three years ago
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- Presents with
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  - Cough for 5 days
  - Loose stools for 2 weeks
  - Fever
  - Rash that has been there for a while

What about his diarrhoea…

Common gastro-intestinal symptoms in AHD:

- **Diarrhoea**
- **Abdominal pain**
- **Abdominal distention**
- **Painful swallowing**
- **Nausea**

Approach to Diarrhoea

- **Common symptom in AHD**
- **Affects 40-80% of those not on ART**
- **Electrolyte imbalances can lead to mortality**
- **Affects quality of life**
- **Definition of diarrhoea:**
  - 3 or more loose / liquid stools in 24 hours
  - Acute: less than 2 weeks
  - Chronic: 2 weeks or more

Aetiology

Bacterial	Viral	Protozoal	Non-infectious
• S typhi • Shigella • Campylobacter • E.Coli • C difficile • Mycobacterial (TB, MAC)	• CMV • HIV • Adenovirus • Enterovirus	• Cryptosporidium • Cystoisospora belli • Microsporidium • Entamoeba hystolytica • Giardia	• Medications • Malignancy • Inflammatory bowel disease • Malabsorption syndromes

History

- Duration and severity of diarrhoea
- Stool consistency, presence of mucous or blood
- Constitutional symptoms, including fever, weight loss, night sweats
- Other medications (PIs, antibiotics)
- Exposure to contaminated water (travel history, occupation, hobbies)
- HIV VL if on ART; latest CD4

Examination

- Hydration status
- Vital signs: BP, pulse
- Temperature
- Signs of TB (chest signs, lymphadenopathy etc)
- Abdominal examination: generalised tenderness (non-specific) or localised to left iliac fossa (suggestive of colitis)?
- Fundoscopy to look for CMV retinitis

Back to our case

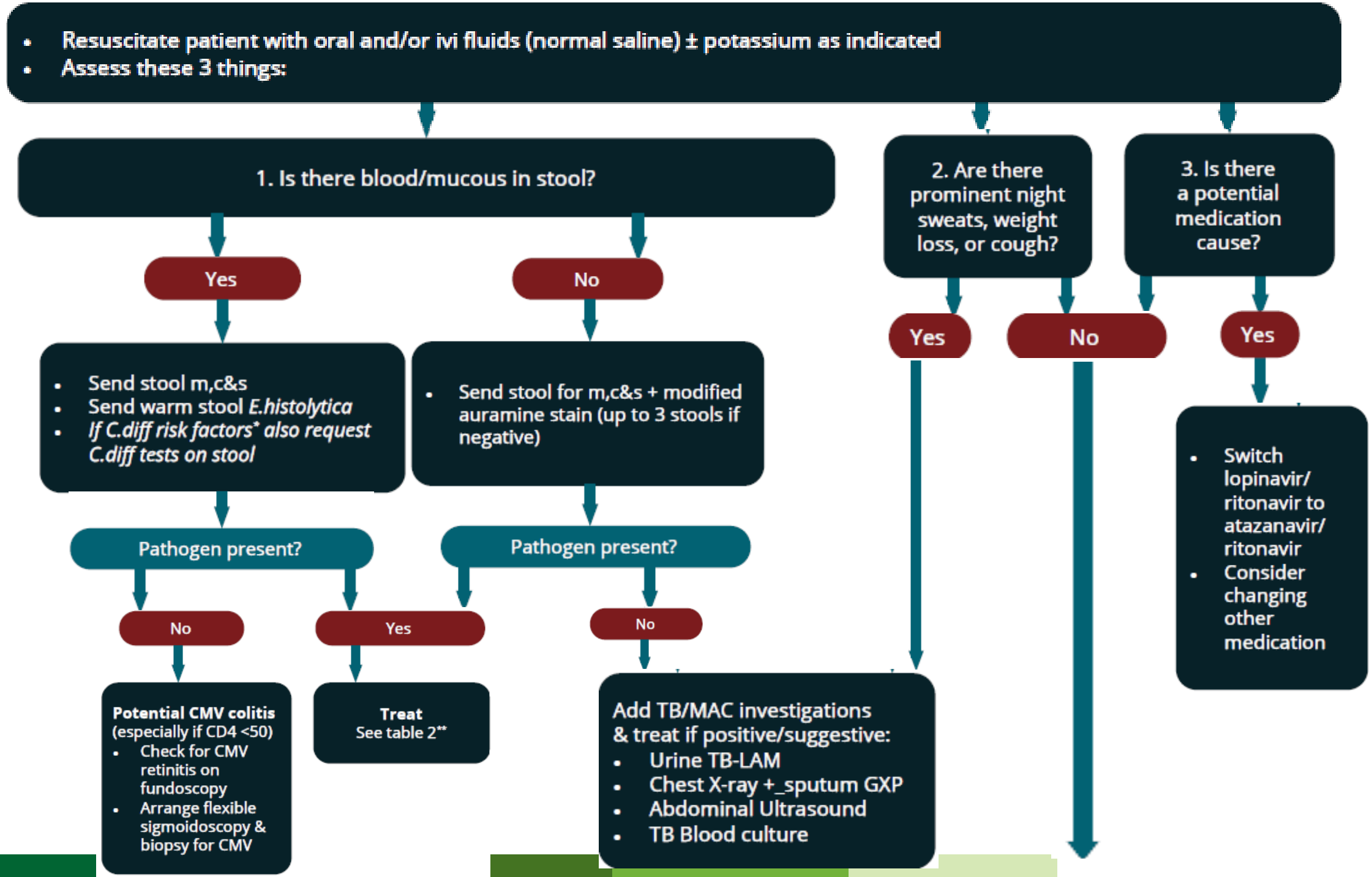
- 35-year-old male
- Chronic diarrhoea for around 2 weeks
- Interferes with his job as a construction worker
- No blood or mucous in stool
- Has noticed some unintended weight loss over the past year
- No past medical history; no current medications
- Vital signs all within normal range; no dehydration
- AHD, not on ART

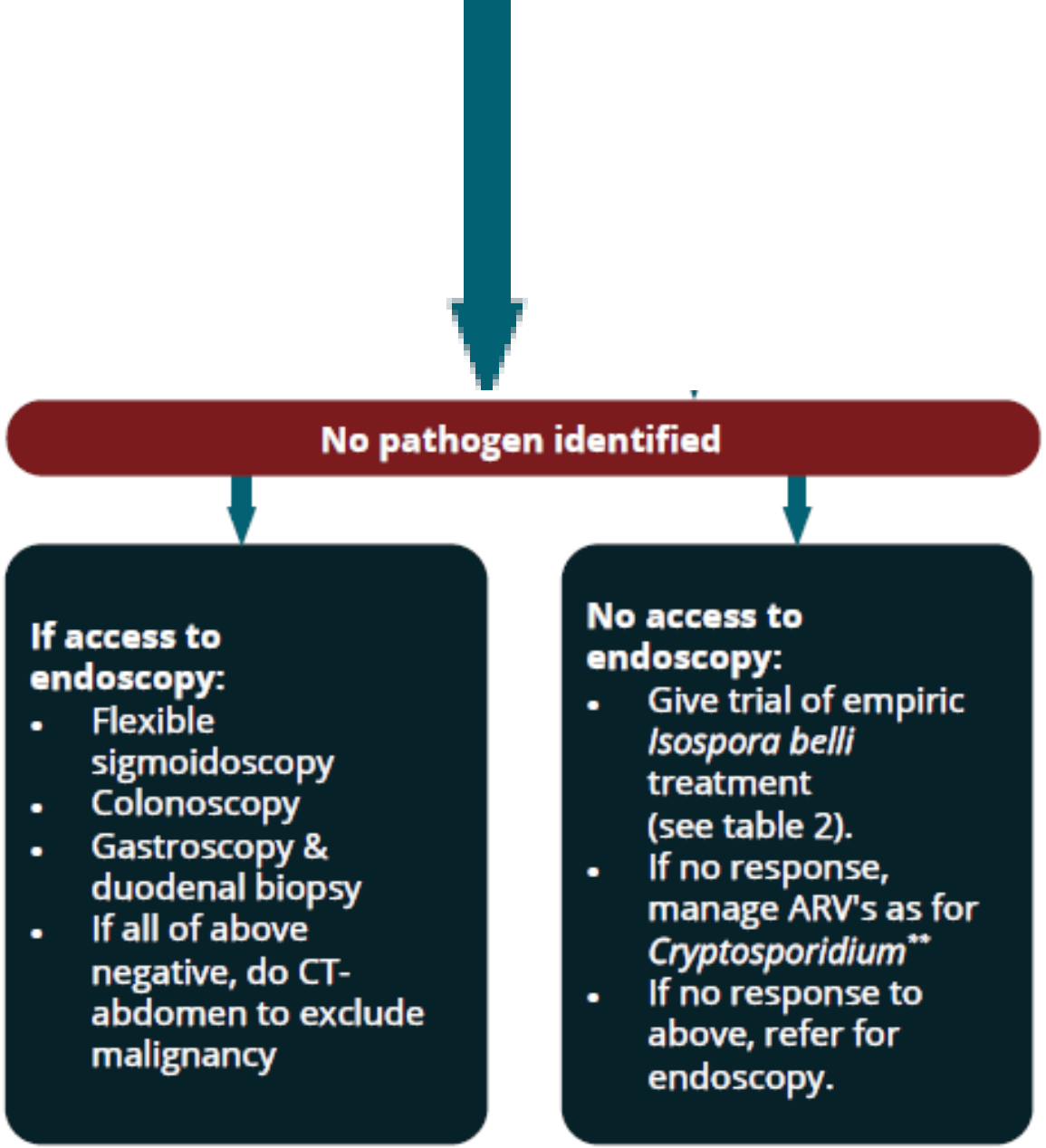
Poll:

You requested a stool MC&S and modified auramine stain for a patient with chronic non-bloody diarrhoea twice, and both times it came back with no abnormalities detected. What is your next step?

A. Send another stool sample for MC&S and modified auramine stain
B. Abdominal X-ray
C. Abdominal ultrasound
D. Trial of empiric cotrimoxazole treatment for possible *isospora belli*

Management of chronic diarrhoea




No pathogen identified
If access to endoscopy:
Flexible sigmoidoscopy
Colonoscopy
Gastroscopy & duodenal biopsy
If all of above negative, do CT-abdomen to exclude malignancy
No access to endoscopy:
Give trial of empiric Isospora belli treatment (see table 2).
If no response, manage ARV's as for Cryptosporidium**
If no response to above, refer for endoscopy.

The third stool MCS result is back:

Microscopy Examination:
Staining Technique:
•**Method:** Modified Acid-Fast Stain

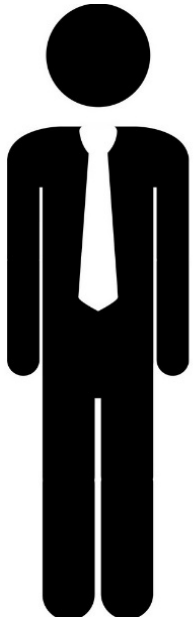
Findings:
•**Oocysts of *Cryptosporidium* spp.:**
- **Appearance:** Small, round oocysts measuring approximately 4-6 µm in diameter.
- **Staining Characteristics:** Stain red against a blue-green background with the modified acid-fast stain.
- **Stage Observed:** Both mature and immature oocysts visible.

Direct Immunofluorescence Assay (DFA):
•**Results:** Positive for *Cryptosporidium* oocysts, confirmed by bright apple-green fluorescence under UV light.
Wet Mount Examination:
•**Appearance:** Small, refractile, spherical structures observed, consistent with oocysts.
•**Motility:** No motility observed.

Conclusion:
•The presence of *Cryptosporidium* oocysts in the stool sample confirms a diagnosis of cryptosporidiosis, correlating with the patient's symptoms and immunocompromised status.

Notes on investigation of chronic diarrhoea

- All cases require stool MCS plus a modified auramine stain to look for coccidian parasites
- Repeat stool samples up to three times: parasites shed ova intermittently, so initial samples may be negative despite infection being present
- Remember urine LF-LAM if any constitutional symptoms are present
- Abdominal X-rays: not routinely done unless suspicion of obstruction or perforation
- Abdominal ultrasound: only if disseminated TB is considered



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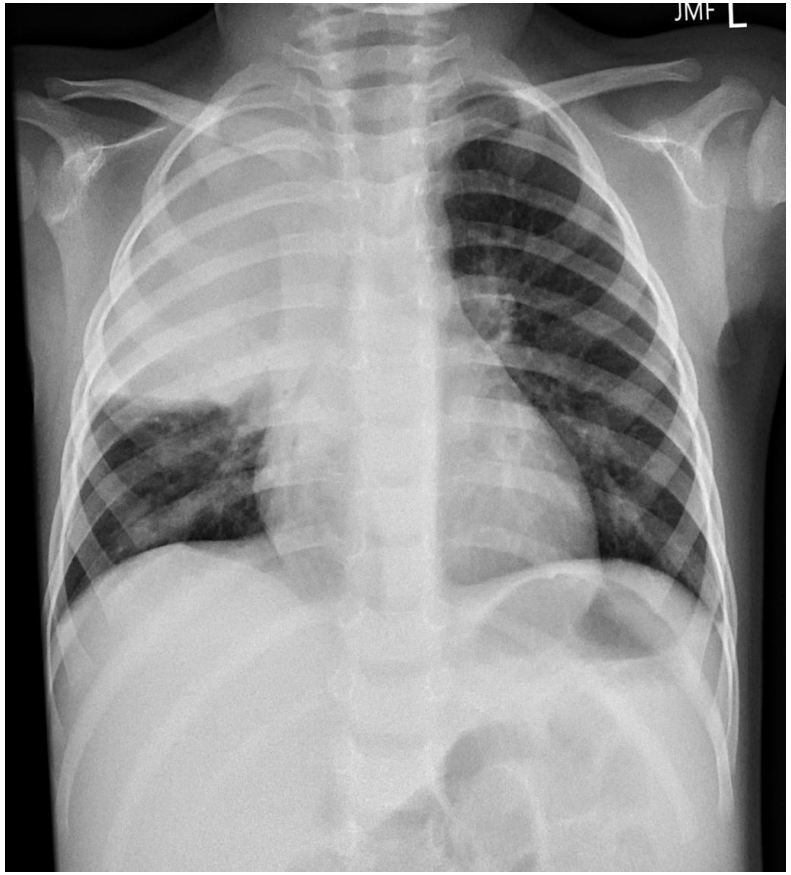
- Presents with
  - Headache for 10 days → Cryptococcal meningitis
  - Cough for 5 days
  - Loose stools for 2 weeks → *Cryptosporidium*
  - Fever
  - Rash that has been there for a while

Back to the cough…

On Review

- Examination:
- RR 32/min, BP 110/70 mmHg
- Temp 38° C
- Bronchial breathing and crackles: right upper zone

- What other information do you want?



Approach to AHD Patient: Respiratory Presentation

- The cough (History taking)
- Onset: how it started, what seems to have started/triggered it, etc.
- Characteristic: type of cough (barking, whooping, hoarse, chesty, irritable throat, wet, bloody or dry, etc.); sputum quantity; etc.
- Associations: generalised symptoms (weakness, fatigue, low of appetite, loss of weight, fever), flu-like (runny nose, red, itchy eyes), with signs (swelling, wheezy, focal signs, etc.), other system symptoms (CVS, ENT, CNS, Derm., CNS, Abdo, etc.)
- Timing/Duration: how long has it been (constant, recurrent, etc.)
- Exacerbating factors: what makes it worse, what time of day, etc.
- Relieving factors: what makes it better, what position, etc.
- Severity: how bad is it (blood, wheeze, affects breathing, talking, etc.)

Approach to AHD Patient: Respiratory Presentation

- **What about danger signs and the systemic enquiry history?**

Keep it Brief and Relevant!

systemic enquiry

constitutional symptoms:
- weight gain / loss
- change in appetite
- fever / chills / night sweats
- headache
- fatigue / malaise
- any lumps or bumps
- rash - itching (pruritus)

cardiovascular system (CVS):
- chest pain
- palpitations
- dyspnoea
- pre-syncope / syncope
- orthopnoea
- peripheral oedema - ankle swelling
- paroxysmal nocturnal dyspnoea
- intermittent claudication

respiratory system (RS):
- cough
- dyspnoea
- sputum
- wheeze
- haemoptysis
- pleuritic chest pain

gastrointestinal system (GIS):
- abdominal pain
- nausea / vomiting
- haematemesis
- dysphagia
- blood P/R
- weight gain / loss
- change in appetite
- dyspepsia
- flatulence
- abdominal distension
- jaundice
- waterbrash
- changes in bowel habit:
  - constipation
  - diarrhoea
  - steatorrhea
  - melaena
  - tenesmus

genitourinary system (GUS):
- frequency
- nocturia
- polydipsia
- loin pain
- haematuria
- terminal dribbling
- urinary urgency / incontinence
- dysuria
- flank pain
- pelvic pain
- oliguria / polyuria / anuria
- dark urine
- as appropriate:
  - menarche
  - menopause
  - menstrual cycle
  - intermenstrual bleeding
  - post-coital bleeding
  - pain on intercourse
  - vaginal / penile discharge
  - erectile dysfunction

central nervous system (CNS):
- headaches
- visual disturbances
- memory impairment
- sleep disturbances
- vertigo / light-headedness
- tinnitus
- blackouts / seizures / fits
- unsteady gait
- weakness
- paraesthesia
- dysarthria
- dysphasia
- confusion

musculoskeletal system (M/S):
- myalgia
- arthralgia
- bone pain
- trauma
- back pain
- joint swelling

Source: Studocu. Available from: https://www.studocu.com/en-gb/document/kings-college-london/medicine/systemic-enquiry-systems-review/13312108

Danger Signs (Need Urgent Attention)

Adults

- Respiratory rate ≥30 breaths per minute
- Heart rate ≥120 beats per minute
- Unable to walk unaided.
- Breathless at rest or while talking
- Coughs up ≥ 1 tablespoon of fresh blood
- Drowsy/confused/loss of consciousness
- Fitting/seizures
- Aggressive, confused or agitated
- Recent sudden onset weakness, numbness or visual disturbance

Source: Adult APC Guideline 2023

Children

- Fitting/seizures
- Drowsy/lethargic/loss of consciousness
- Breathing problem: difficulty breathing, increased respiratory rate, chest indrawing, nasal flaring, grunting, wheezing, blue lips/tongue
- Difficulty feeding/eating
- Neck stiffness
- Persistent vomiting/headache
- New weakness of arm/leg
- Pupils of different sizes
- Swollen abdomen

Source: IMCI Guideline 2023
and the Management of Tuberculosis in Children and Adolescents 2024

Approach to AHD Patient: Respiratory Presentation

- **On examination (Vitals and Systems)**
- Head to toe
  - Look, feel, move, and listen: ***(shape/surface/colour/size/temperature/pain/texture); (impulse, pulsation, fixation); (gas, fluid, or solid); (lesion/ulceration/deformity)***
  - site: hair patchy?, face rash?, eyes temperature?, ears same size?, alar flaring? nose fluid filled?, noisy or mouth breathing? mouth ulceration?, tongue colour?, palate mass?, teeth/gums shape, throat surface?, larynx swelling?, skin texture?, rash painless?, neck swelling?, nails colour/texture?, feet swollen?
- Systems (Skin to Blood)
  - Look, feel, move, and listen
  - Integumentary (Skin, Hair & Nails), Dental, Head & Neck, ENT, Musculo-Skeletal/Soft Tissue, Respiratory, Neurological (CNS), Abdo (GIT, Hepatobiliary), CVS, Uro-Genital (renal) & Reproductive, Endocrine, Lymphatic (tonsils, lymph nodes, bone marrow and spleen) & Haematological

Approach to AHD Patient: Respiratory Presentation

- **On examination (Vitals and Systems)**
- Head to toe EXAM: Does it matter?
- ***YESSSSS!!!!***
  - hair patchy?, face rash?, eyes size, colour?, forehead/ears temperature?, eardrum inflamed alar flaring? nose fluid filled?, noisy or mouth breathing?
  - mouth ulceration?, tongue colour?, palate mass, teeth/gums shape, throat surface?, larynx swelling?,
  - skin texture?, rash painless?, neck swelling?, nails colour/texture?, feet swollen

- **Differentials**
  - Viral infections (eyes, face, rash etc.)
  - Fungal infections (skin, hair & nails)
  - Bacterial infections (skin, soft tissue)
  - Flu (systemic features)
  - URTI (limited to upper airway)
  - Severity (obstruction or distress)
  - Kaposi's (palate, feet/legs, lungs)
  - Syphilis (skin, palms, tongue, lungs)
  - Cardiac (distress, JVP, oedema, lungs)
  - Disseminated conditions (skin and lungs)
  - Malignancies (neck and lungs)
  - Pulmonary Embolus (calves & lungs)

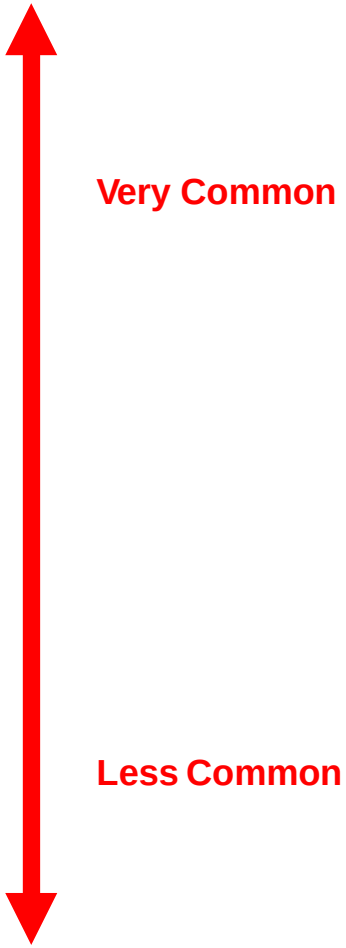
Poll 3

With regards to our patient's cough, what are the more likely to less likely conditions, given his clinical presentation and findings (grouped from the most common to less common causes)?

A. LIP, Pulmonary Hypertension, Viral Infection and Bacterial Pneumonia
B. Bacterial Pneumonia, TB, PJP, and Viral Infection
C. Cryptococcosis, Kaposi Sarcoma, Non-Tuberculous Mycobacterium (NTM), and Lymphoma
D. TB, CCF, Pulmonary Embolus, and NTM

Differential Diagnosis

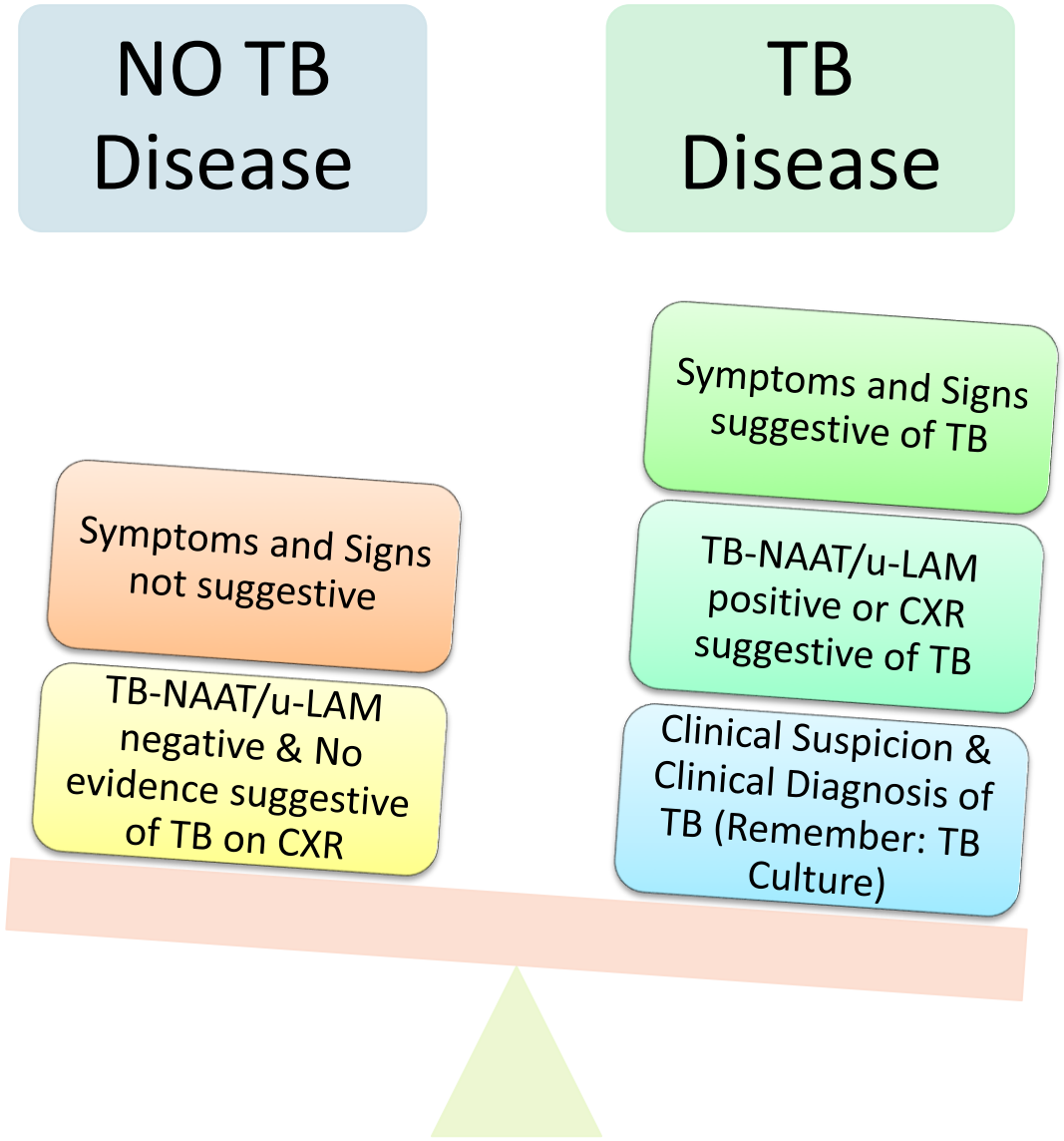
- Bacterial pneumonia
- Tuberculosis
- PCP/PJP
- Viral
- Fungal
  - Cryptococcal
  - Dimorphic
- Kaposi Sarcoma
- Non-tuberculous Mycobacterium (NTM)
- Other
  - Lymphoma
  - Lymphocytic interstitial pneumonia (LIP)
  - Pulmonary hypertension



NDOH criteria for LAM

In-Patient	Out-Patient/ Ambulatory patient
• All seriously ill HIV infected patients – Respiratory rate > 30 breaths/minute – Fever (Temperature >38°c) – Heart rate > 120 beats/minute – Inability to walk unaided – Body mass index <18.5kg/m² • With or without TB symptoms • Regardless of CD4 count • Regardless of WHO clinical stage • Xpert + LAM performed concurrently in these patients. • In sputum scarce patients LAM only can be performed	• All HIV infected patients with signs and symptoms of TB • CD4 count ≤ 200 cells/µL • Advanced HIV disease – WHO clinical stage 3 or 4 disease

Don’t forget…TB



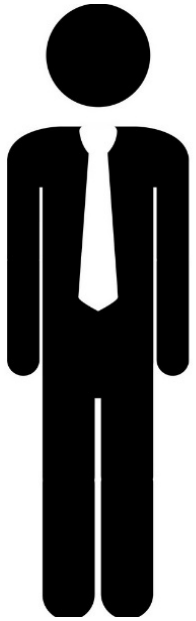
Pulmonary vs. Extra-Pulmonary

- Imaging:
- Cavitations
- Nodular infiltrates (including and esp. military nodules)
- Large pleural effusions
- Intra-thoracic lymph node TB in children
- Miliary pattern (always consider extra-pulm. TB)

- Imaging:
- Large peripheral lymph nodes
- Lymphocyte-predominant exudative pleural effusion
- Pericardial effusion
- Abdominal lymph nodes/ascites/splenic abscesses on ultrasound

Decisions, Clinical Decisions

- In **Children Living with HIV (CLHIV)**, consider other factors and discuss with experts (if negative diagnostic tests and/or CXR)
  - Age
  - Duration of symptoms
  - Specific signs and symptoms
  - Danger signs
  - Nutritional status
  - TB contact (within 1 year)
  - TST



35 year old man

- Diagnosed with HIV three years ago
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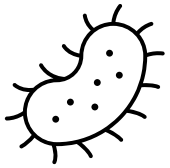
- Presents with
  - Headache for 10 days → Cryptococcal meningitis
  - Cough for 5 days → CAP (empiric) / ?PTB
  - Loose stools for 2 weeks → *Cryptosporidium*
  - Fever → multiple pathologies
  - Rash that has been there for a while

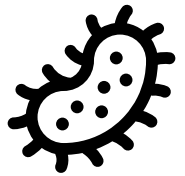
Summary of what helps

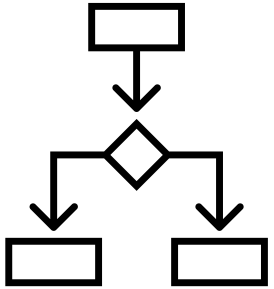
- **Duration of symptoms**
  - PJP approximately 3 weeks (but may be acute)
- **Chest X-ray**
  - Cavitatory– TB, NTM, aspergillus, norcadia, rhodococcus
  - Adenopathy or effusion: PJP unlikely
- **CD4+ count:**
  - > 200: TB, CAP more likely
  - 100-200: also PJP, KS
  - <100: anything goes
- **Urine:**
  - Do LAM for all sick HIV-infected with CD4 count < 100 cells/uL
- **Expectorated sputum**
  - Xpert-TB
  - MC&S
- **Bronchoscopy:**
  - Very helpful
  - Largely unavailable

The rash is still there…

Skin rash/lesions and AHD







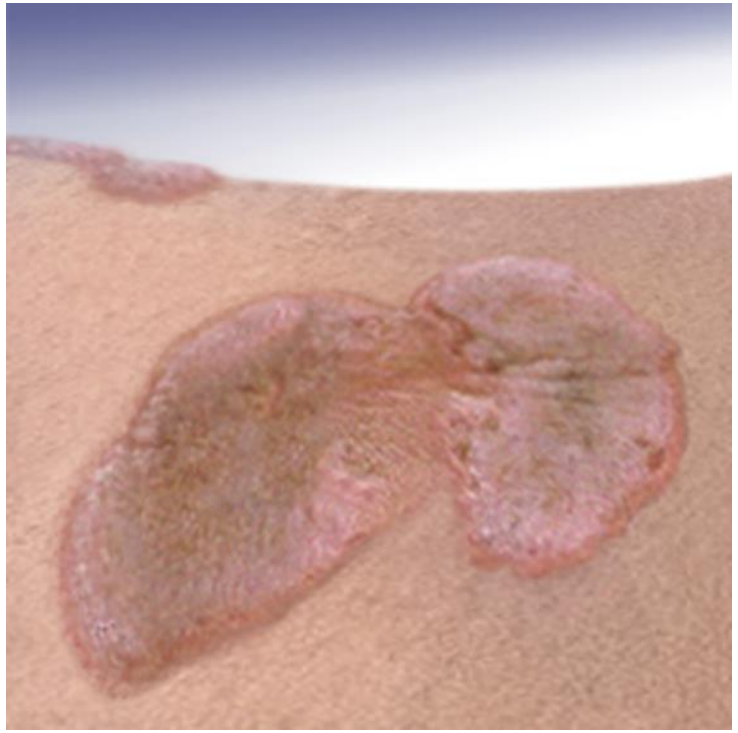
Poll 4: Our patient has the following lesions: flat, > 2cm in diameter on the left and solid, elevated, diameter > 0.5cm. These can be best described as: (Left to Right)

A. Papule and Plaque

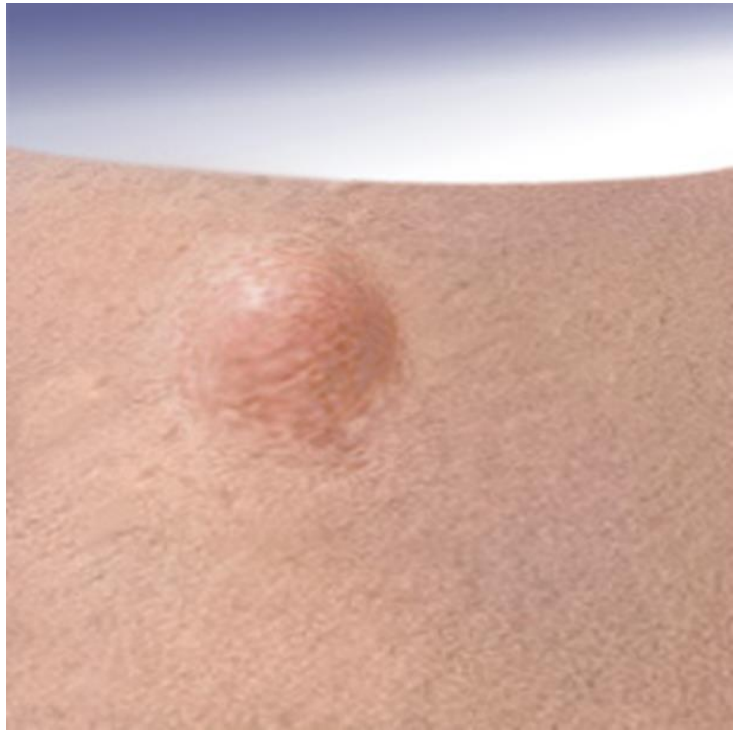
B. Blister and Nodule

C. Papule and Blister

D. Plaque and Nodule



Left Lesion (L)



Right Lesion (R)

So… how does this help our patient?

- **What could be causing the lesions?**
- **What additional information do we need?**

- Back to detailed history, examination, and evaluation!

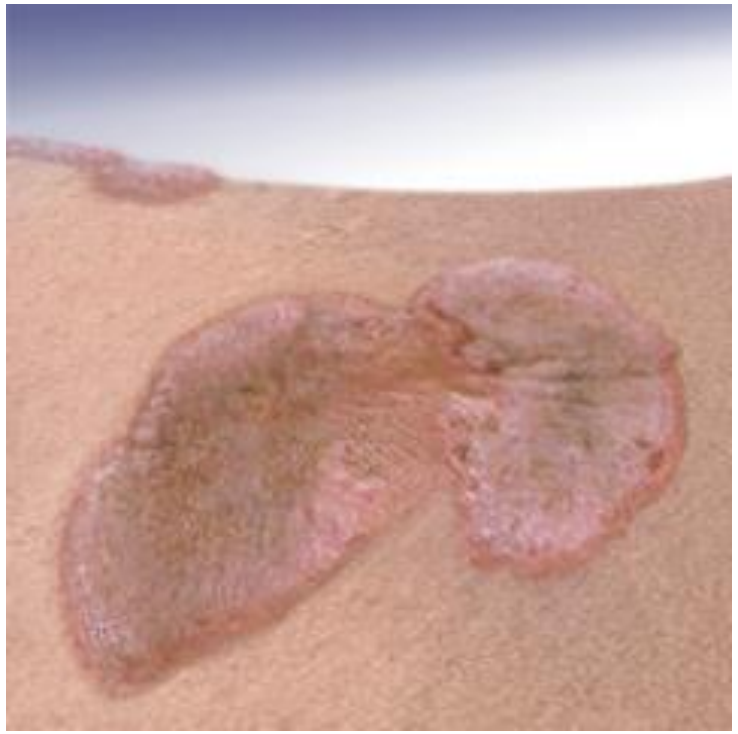
Possible Infections & infestations

- **Fungal**
  - Oral candidiasis
  - Tinea
    - *Capitis*
    - *Corporis*
    - *Cruris*
    - *Unguium*
  - Cryptococcosis
  - Histoplasmosis
  - Sporotrichosis
- **Parasitic**
  - Scabies
- **Bacterial**
  - Impetigo
  - Ecthyma
  - Tuberculosis
  - Atypical mycobacteria
  - Syphilis
  - Bacillary angiomatosis
- **Viral**
  - Herpes labialis and genitalis
  - Herpes zoster
  - Chickenpox
  - Warts
  - Molluscum contagiosum

Approach to Skin Conditions

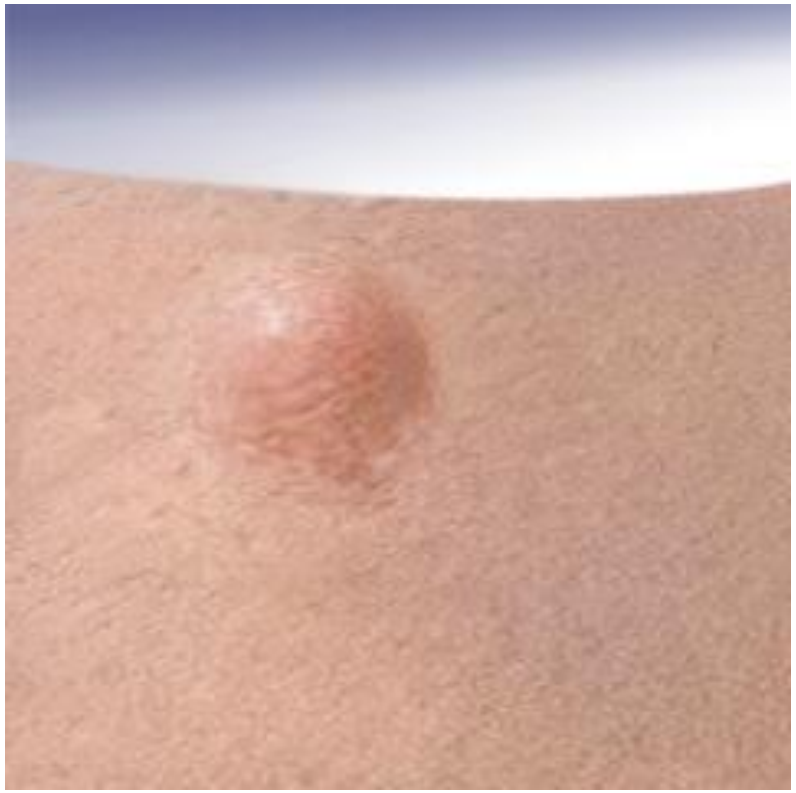
- **Aetiological Approach… not always practical**
- **Clinical approach**
  - Lesion distribution
    - *Localised*
    - *Generalised*
  - Lesion morphology
    - *Plaques*
    - *Nodules*
    - *Papules*
    - *Blisters*
    - *Ulcers*

Plaques Distribution



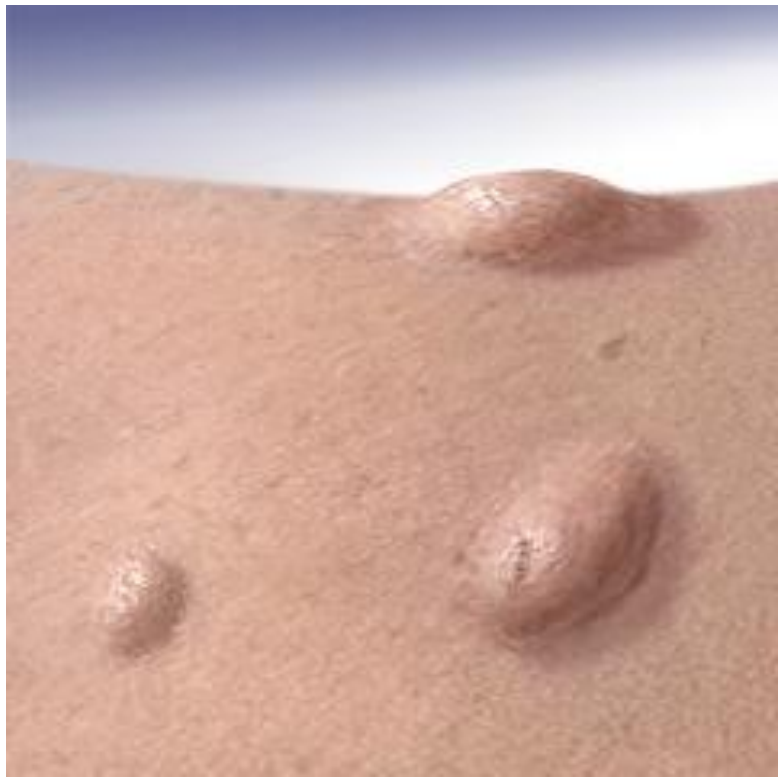
Flat lesions more than 2cm in diameter

Nodules



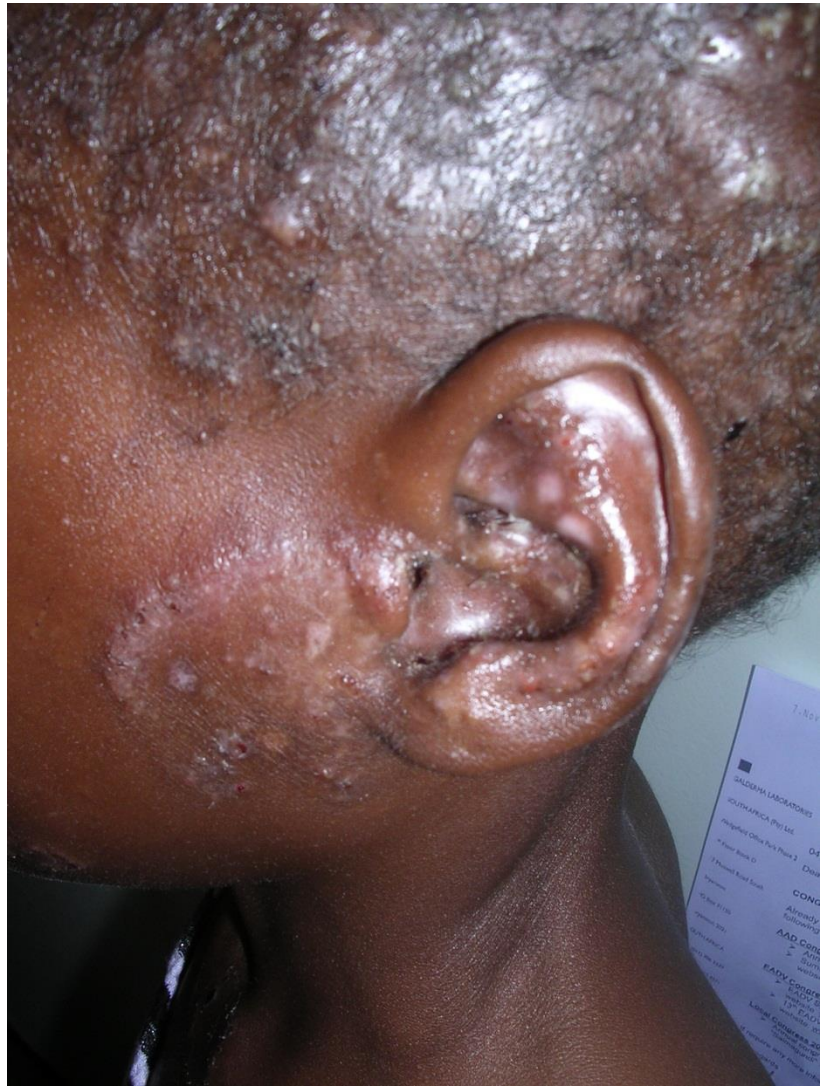
Solid elevated lesion with a diameter > 0.5 cm with substantial depth

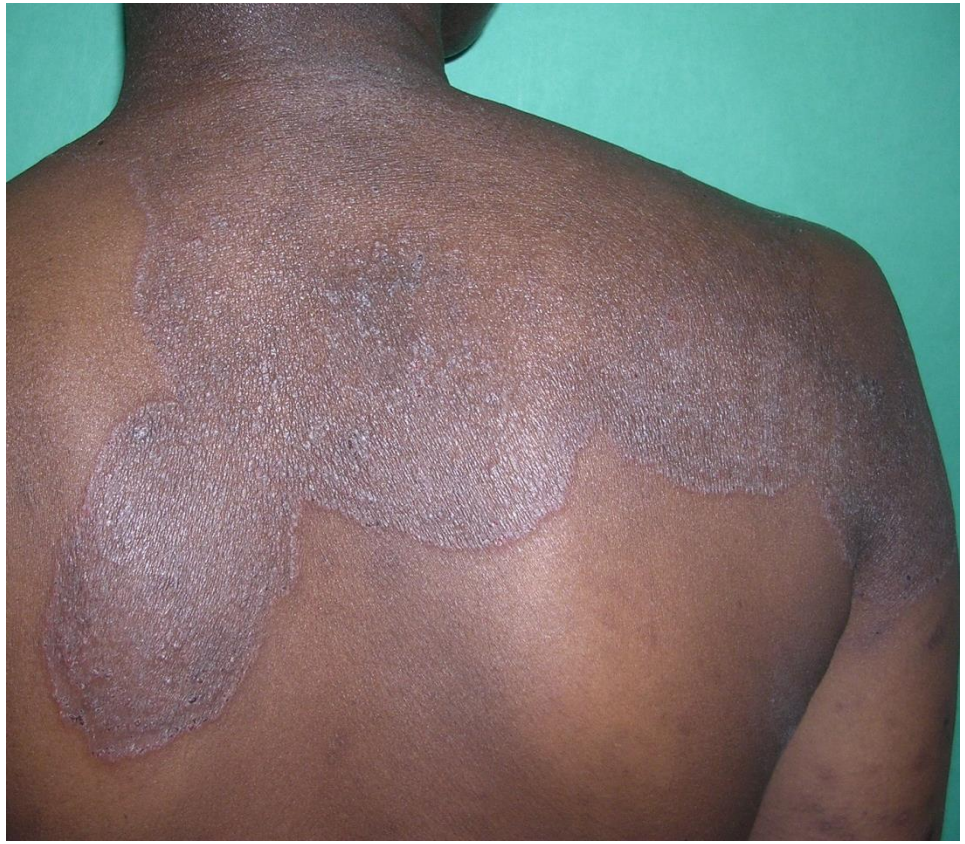
Papules



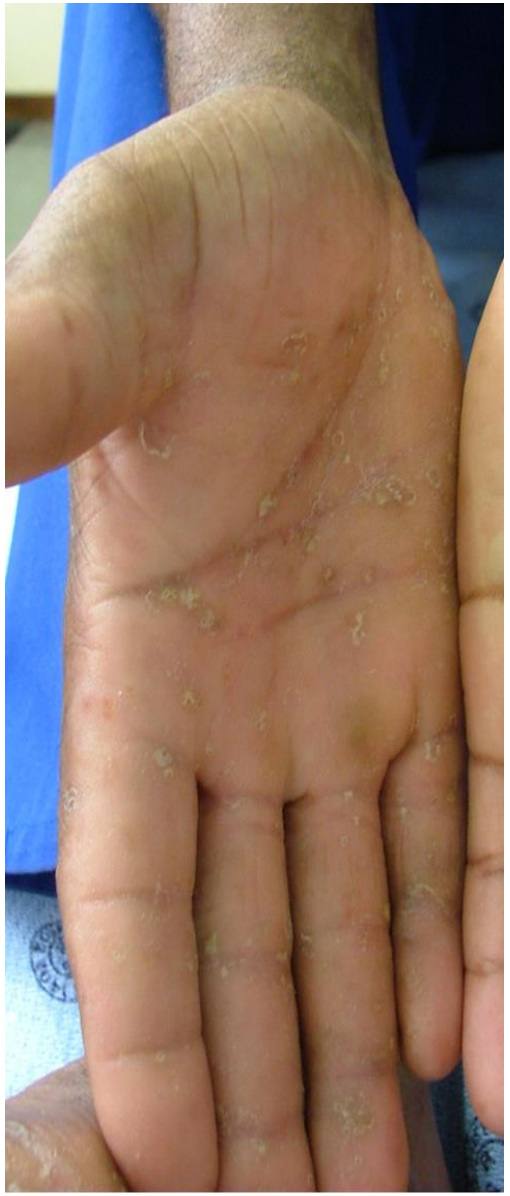
Solid elevated lesion with a diameter less than 0.5 cm

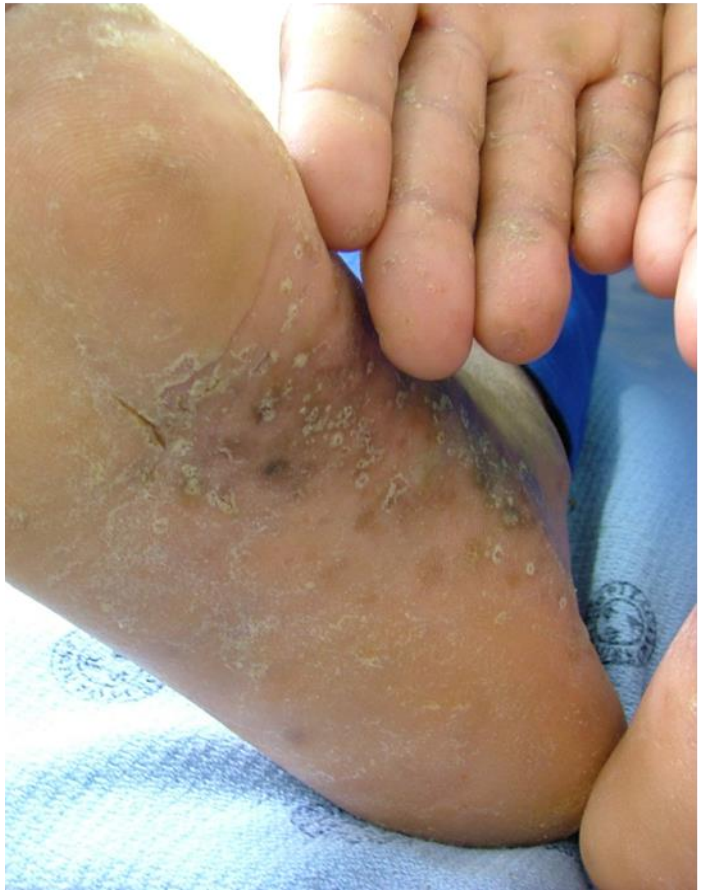
Tinea

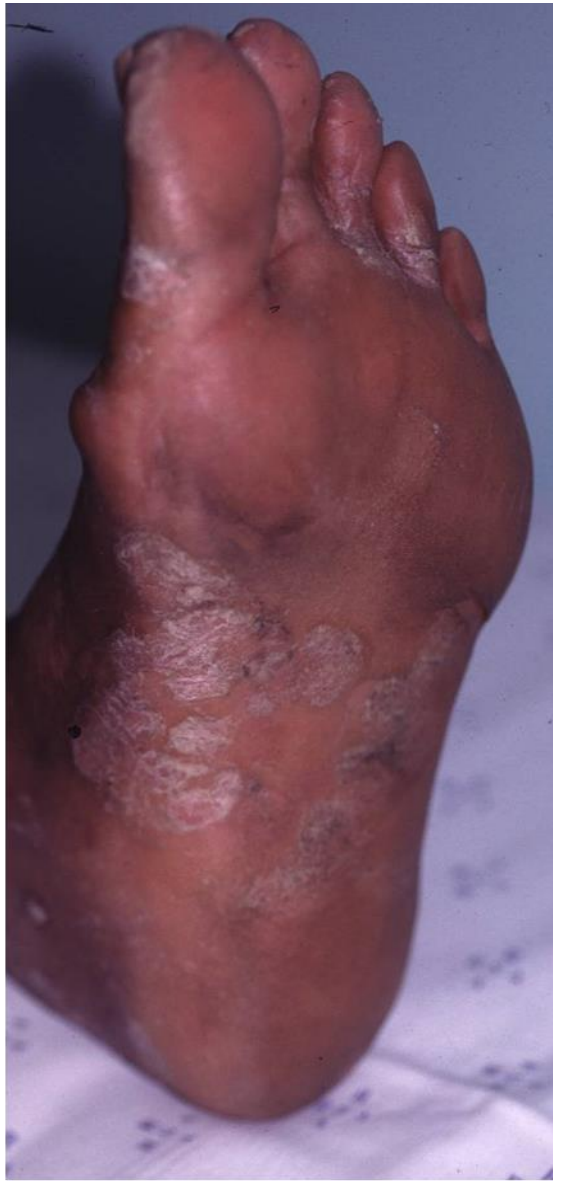




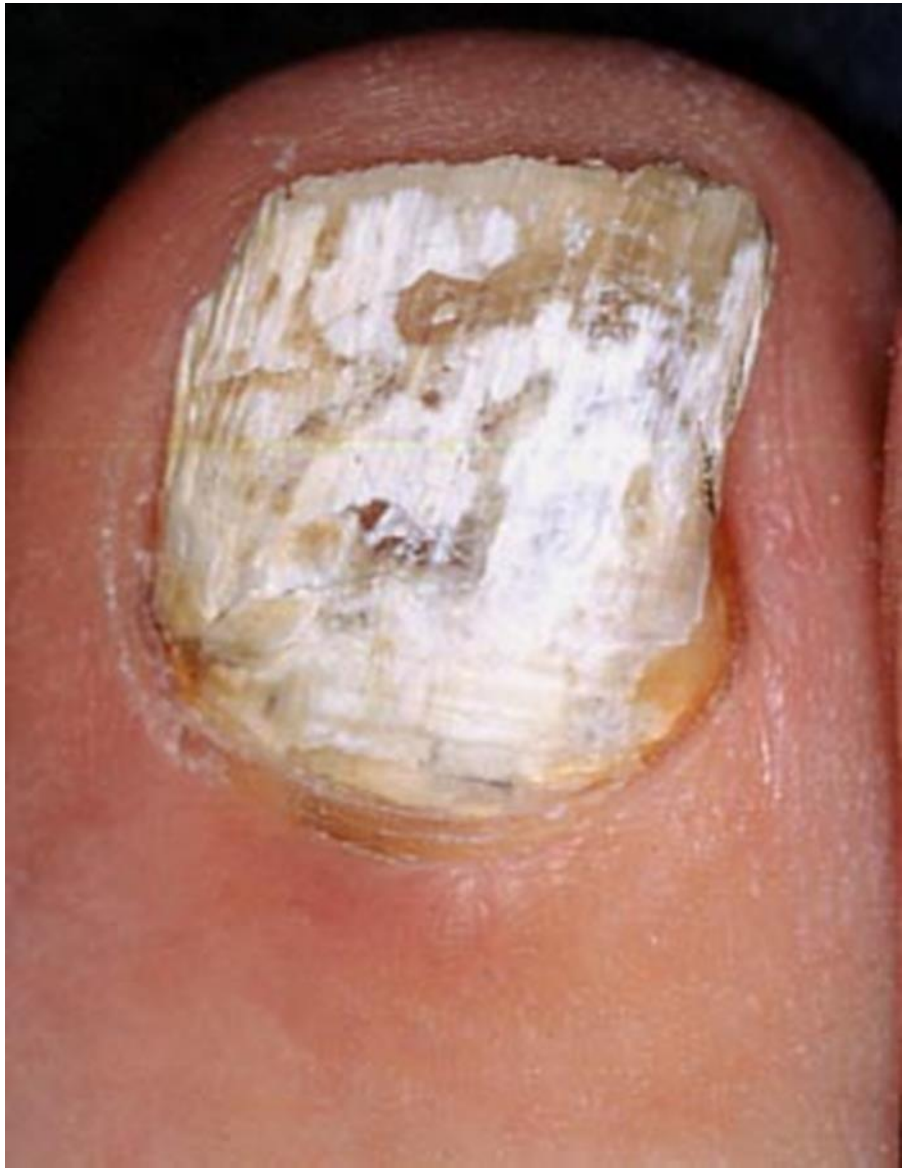
Tinea

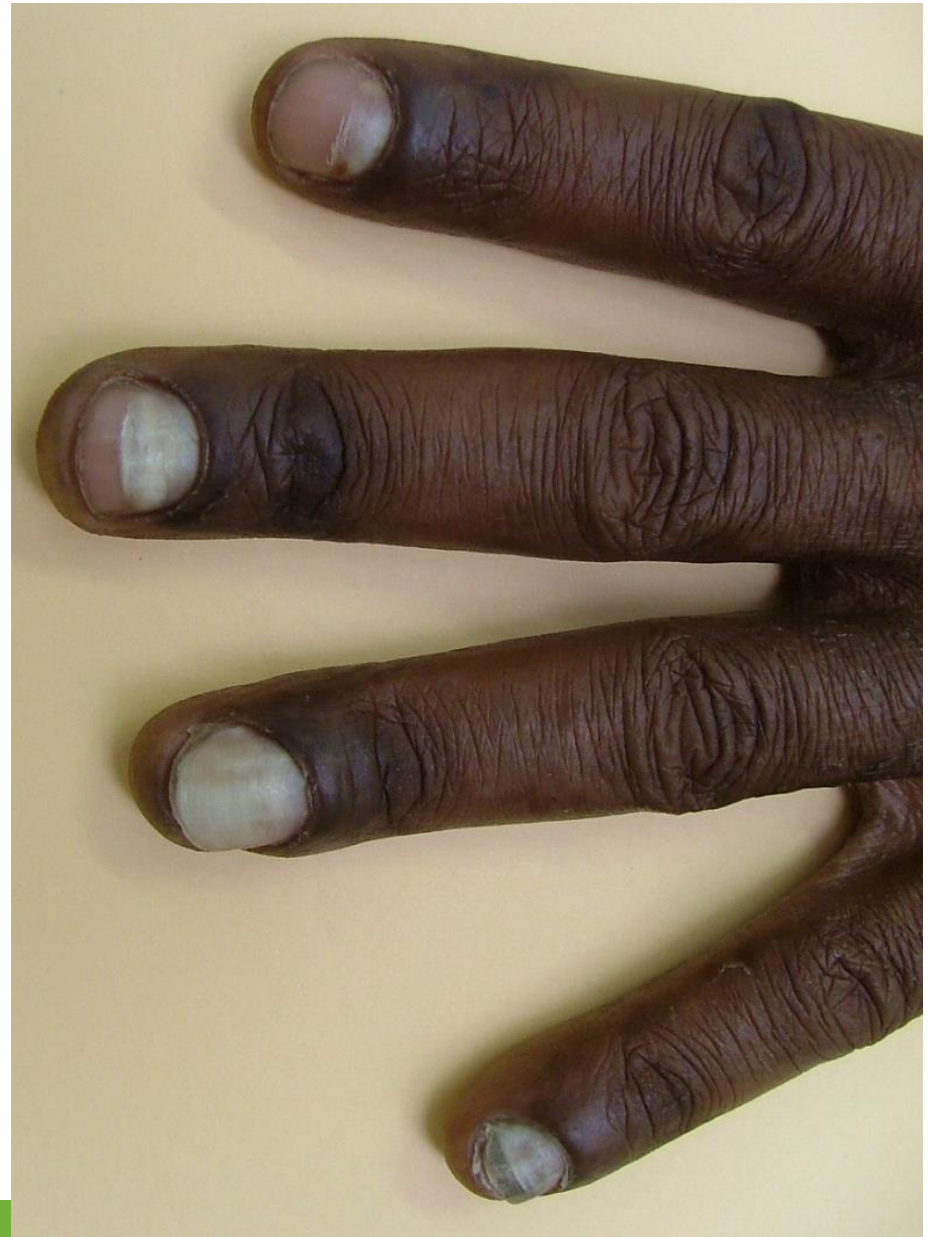




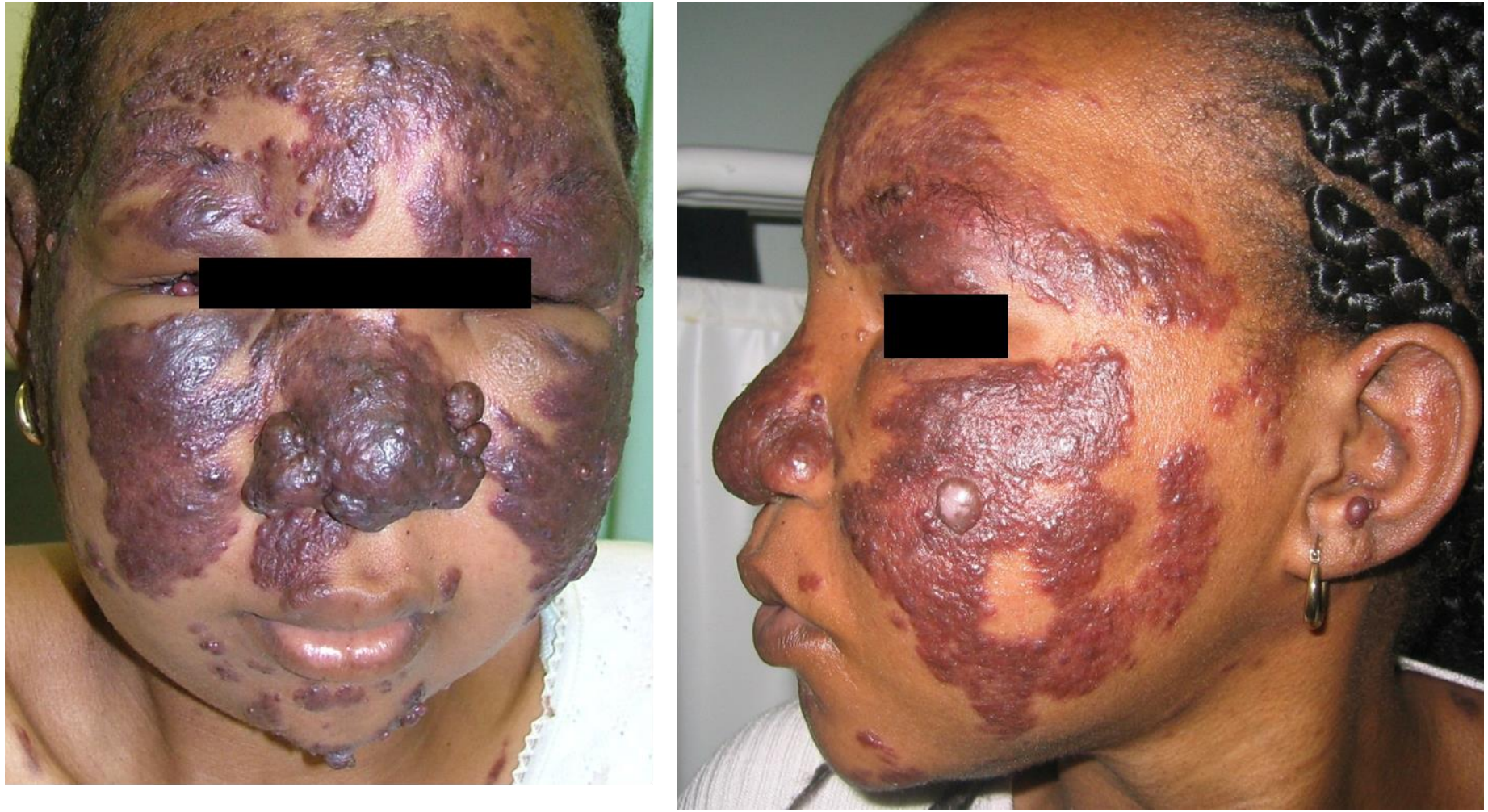


Tinea





Kaposi's Sarcoma



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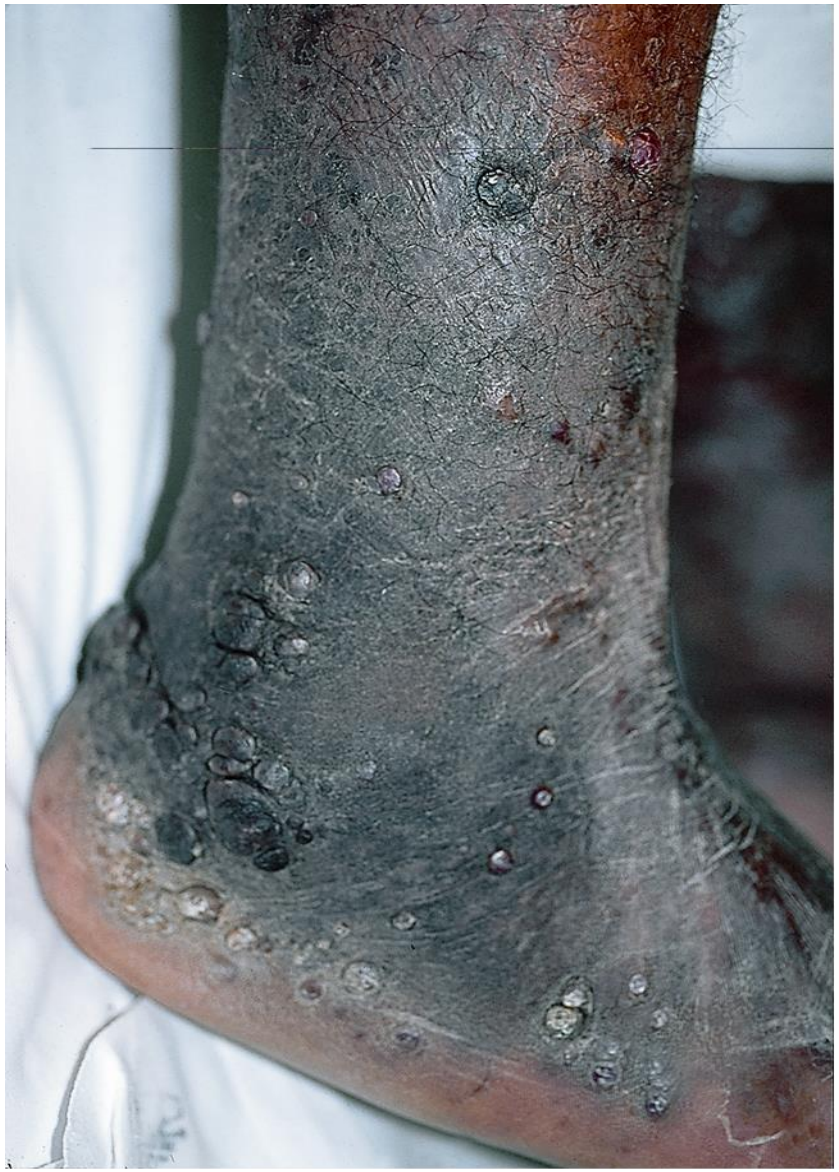
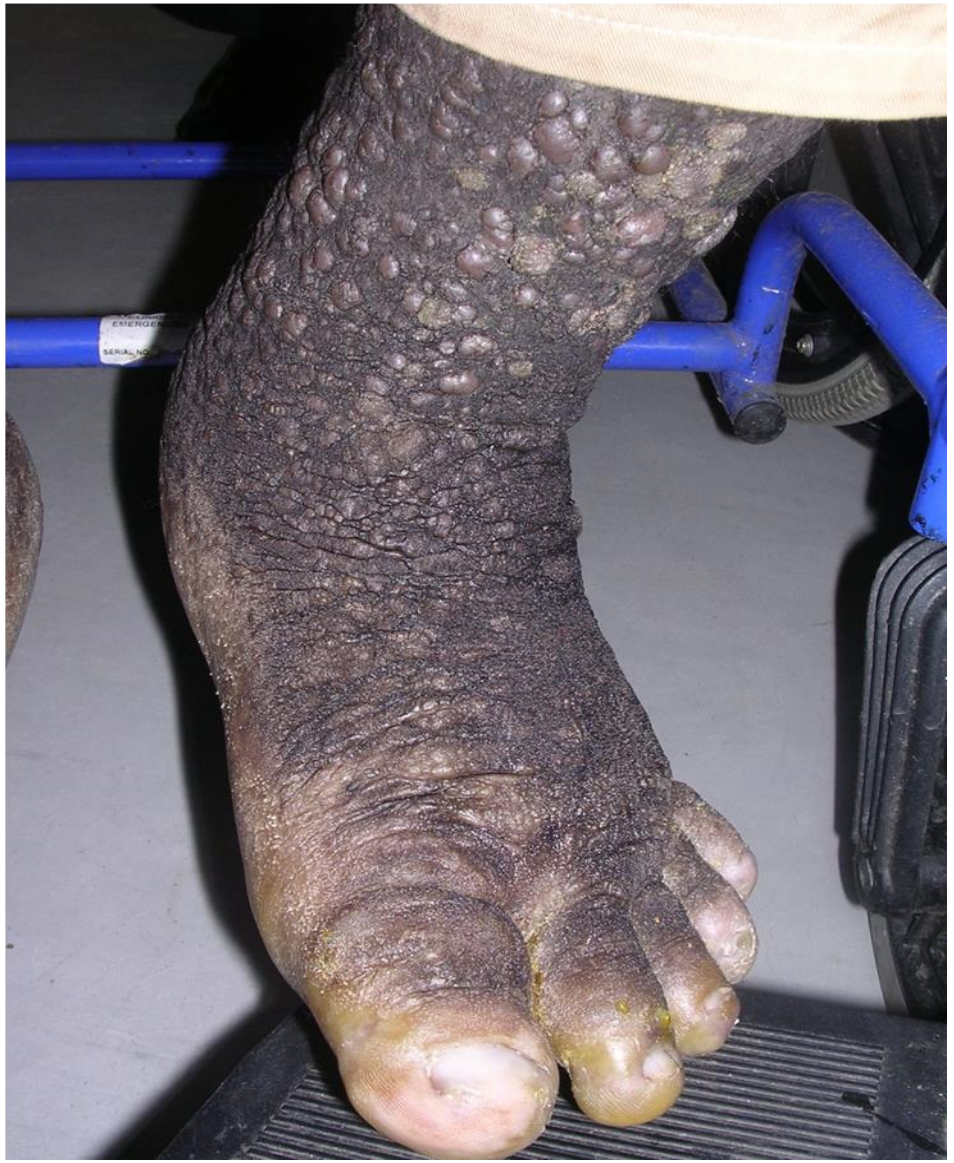
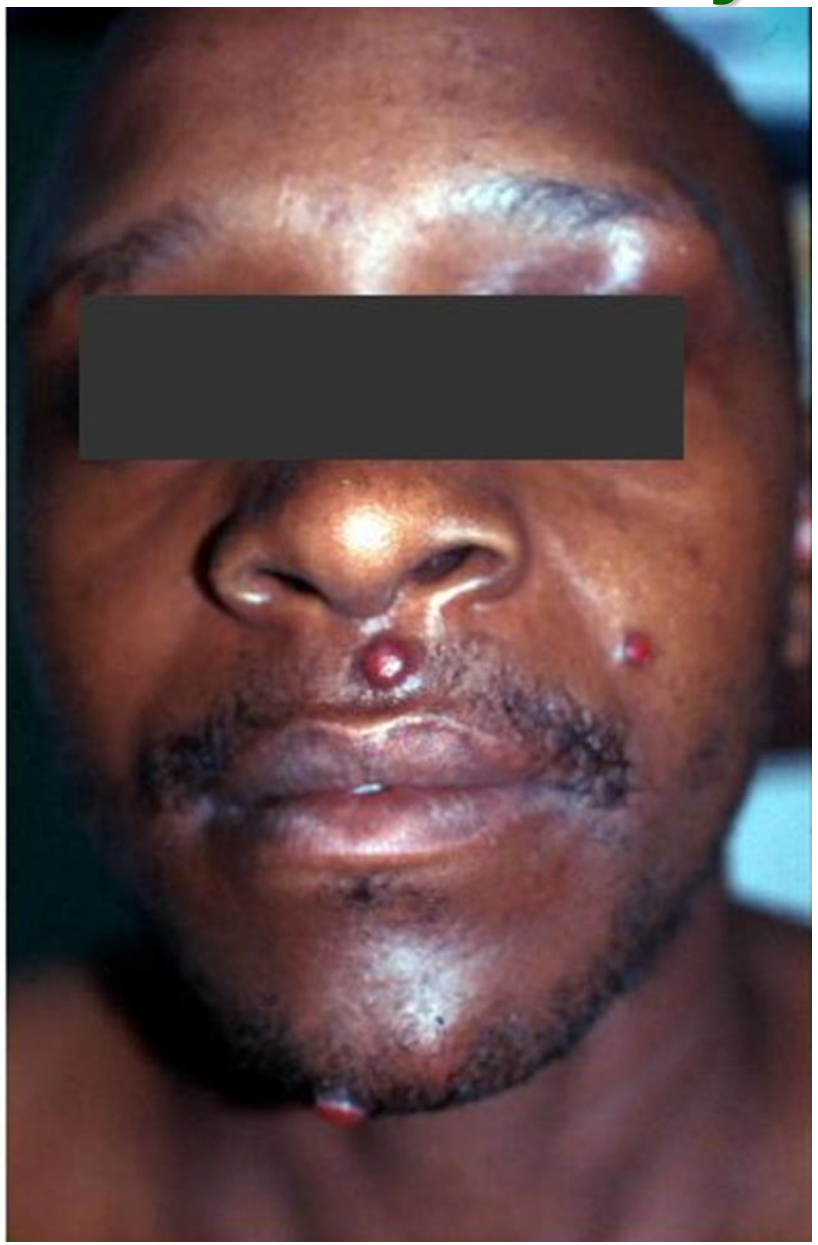
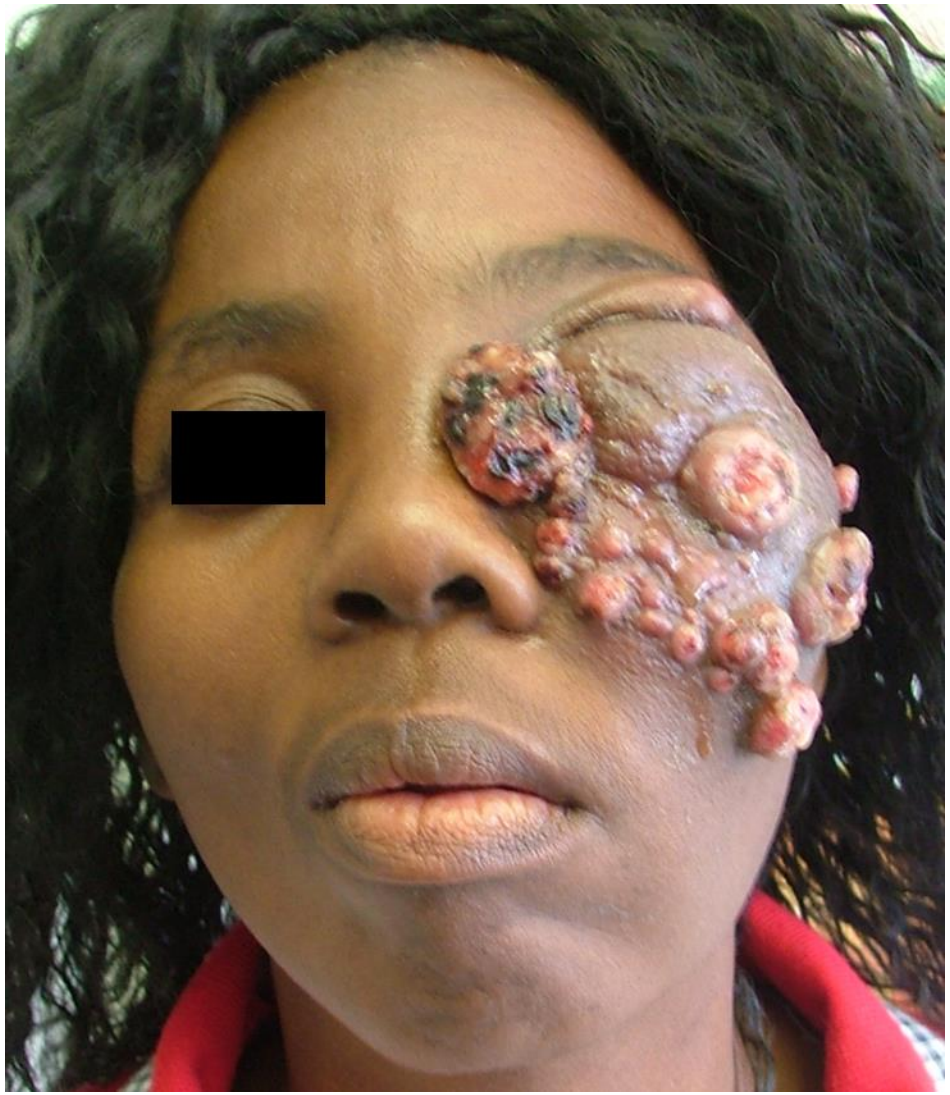


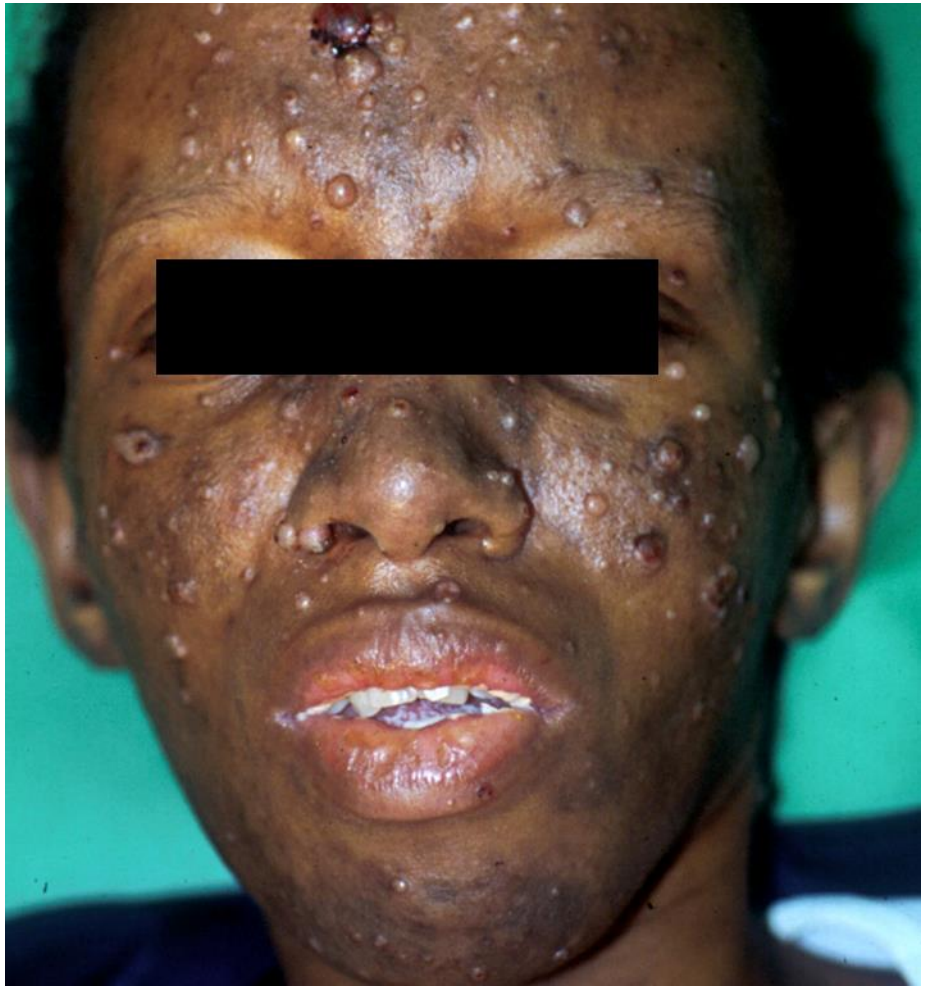


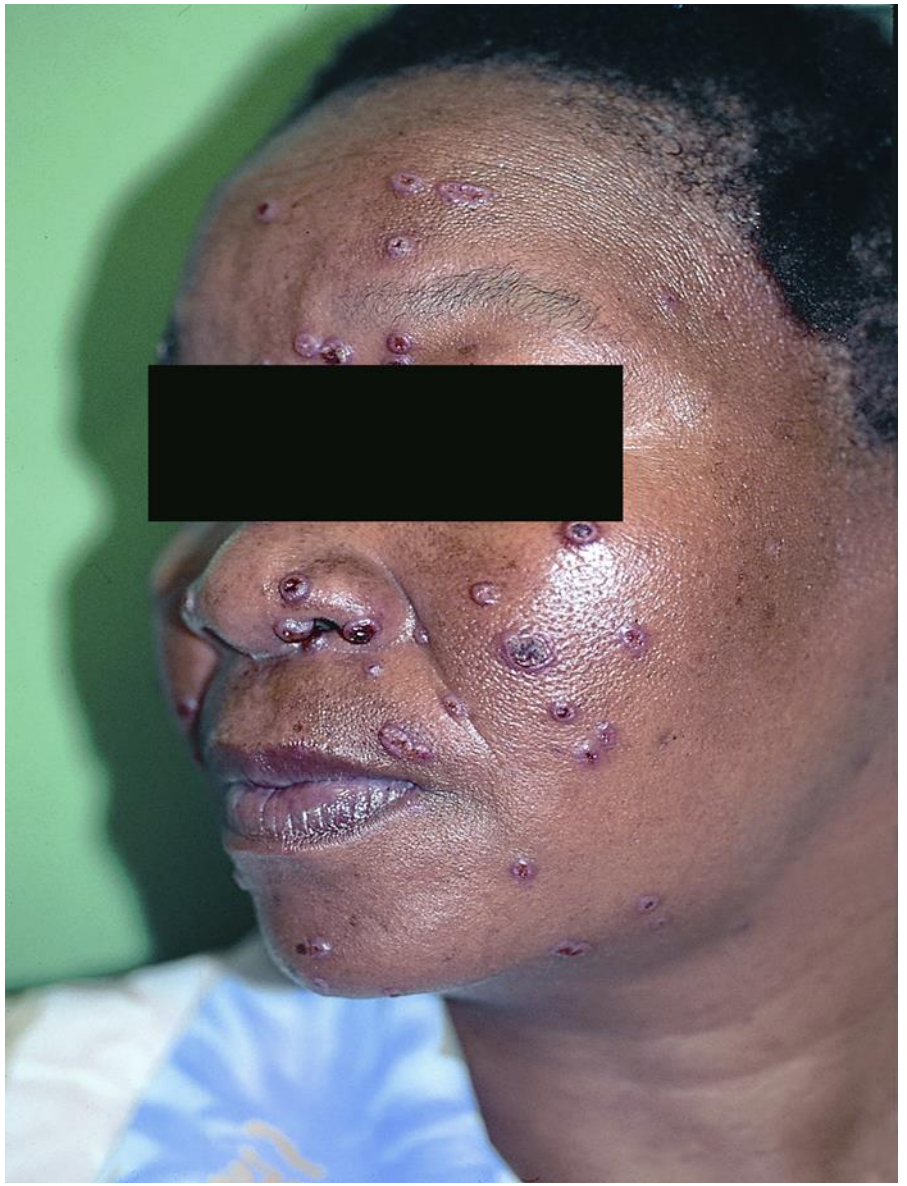
Bacillary Angiomatosis



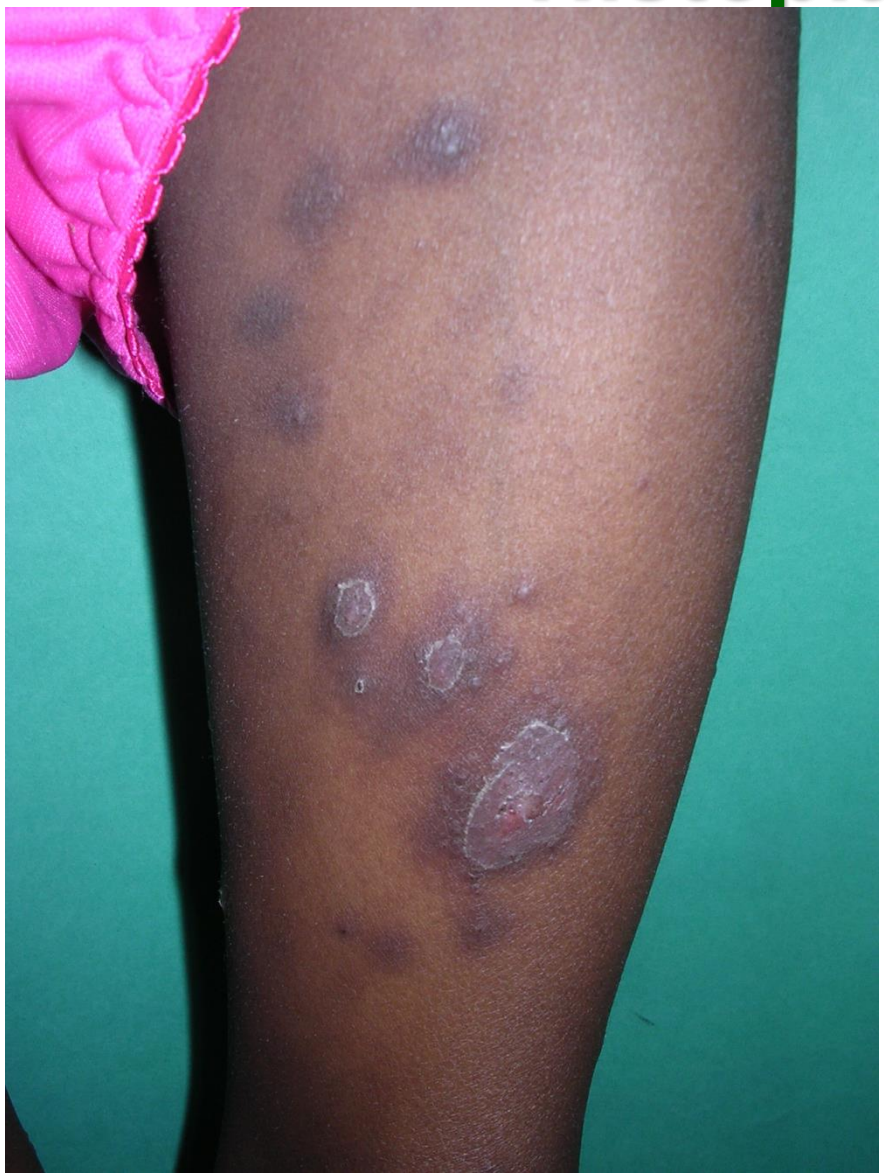


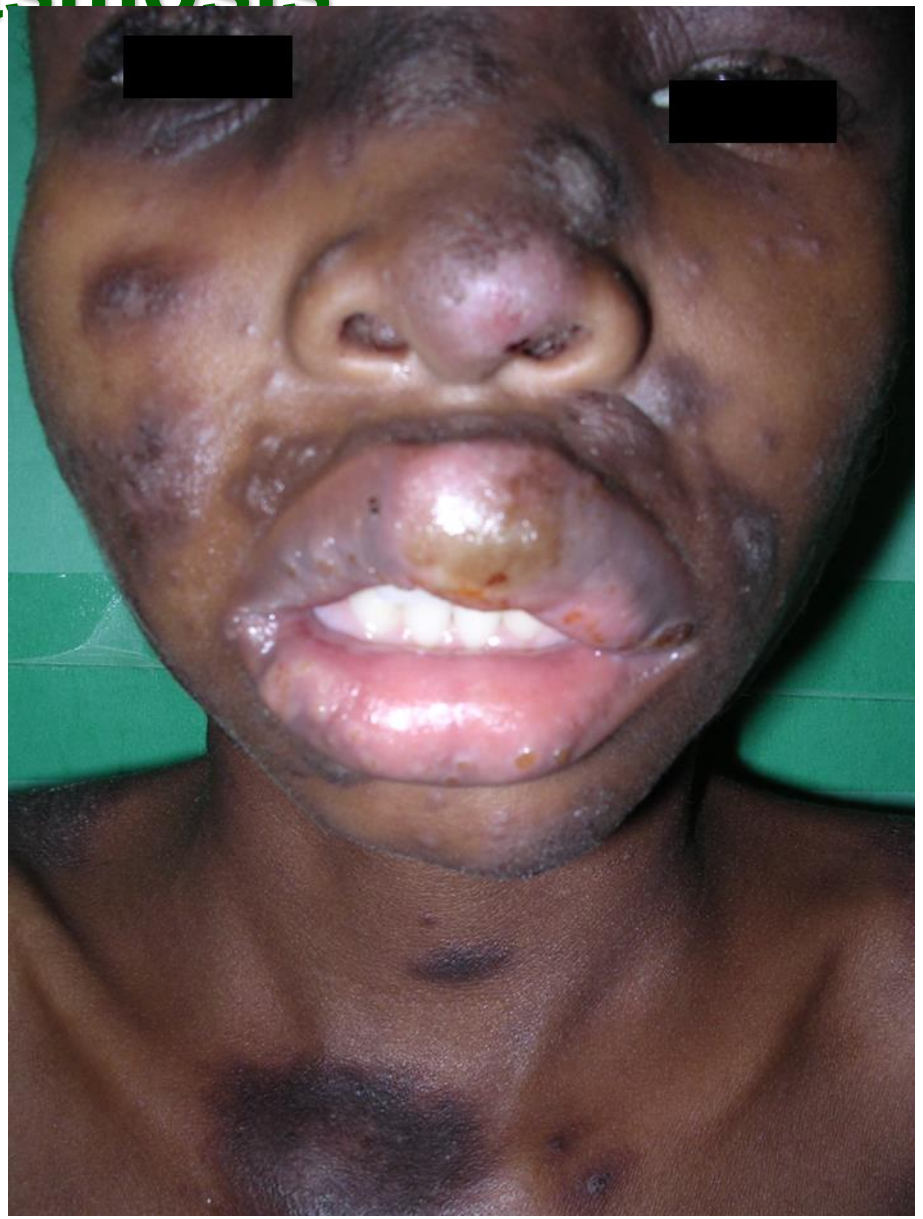
Cryptococcosis



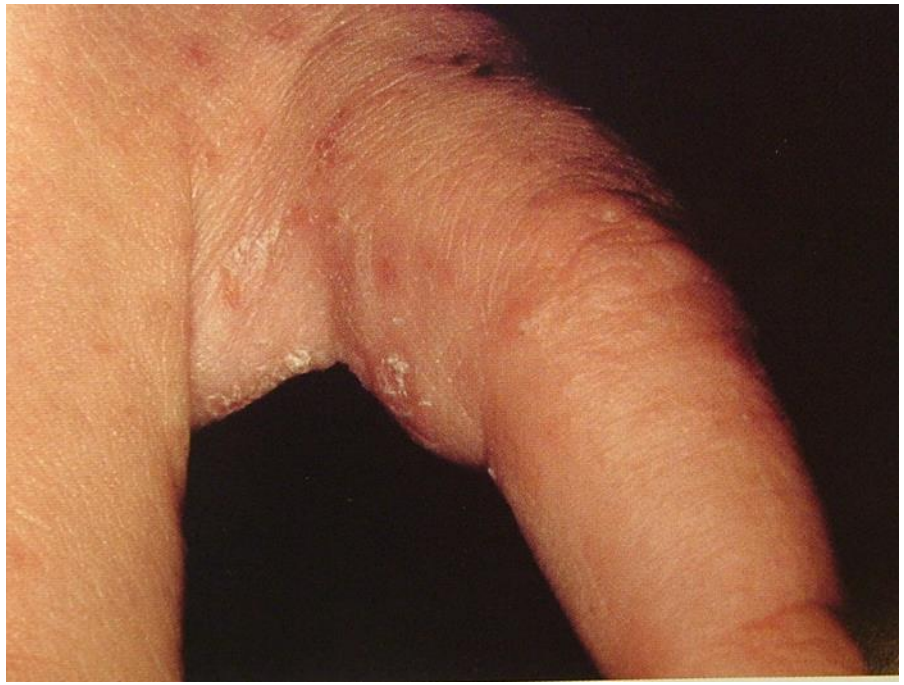


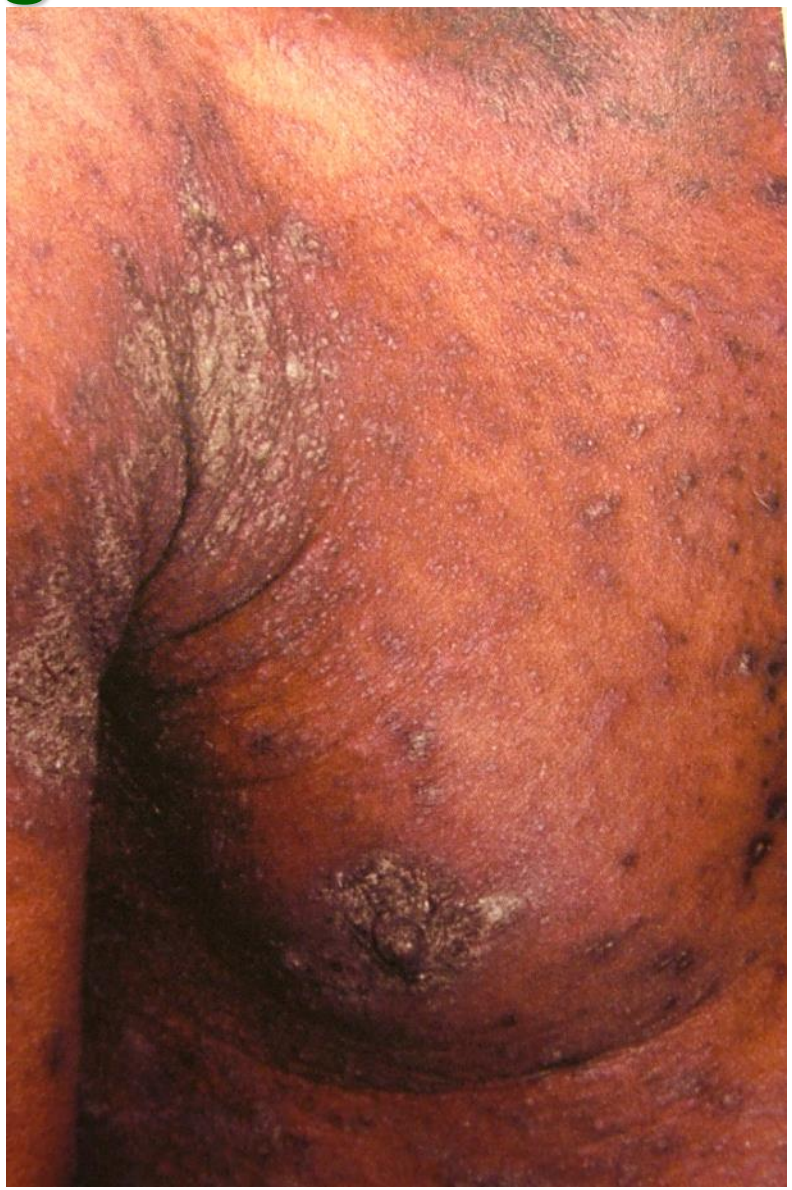
Histoplasmosis





Scabies





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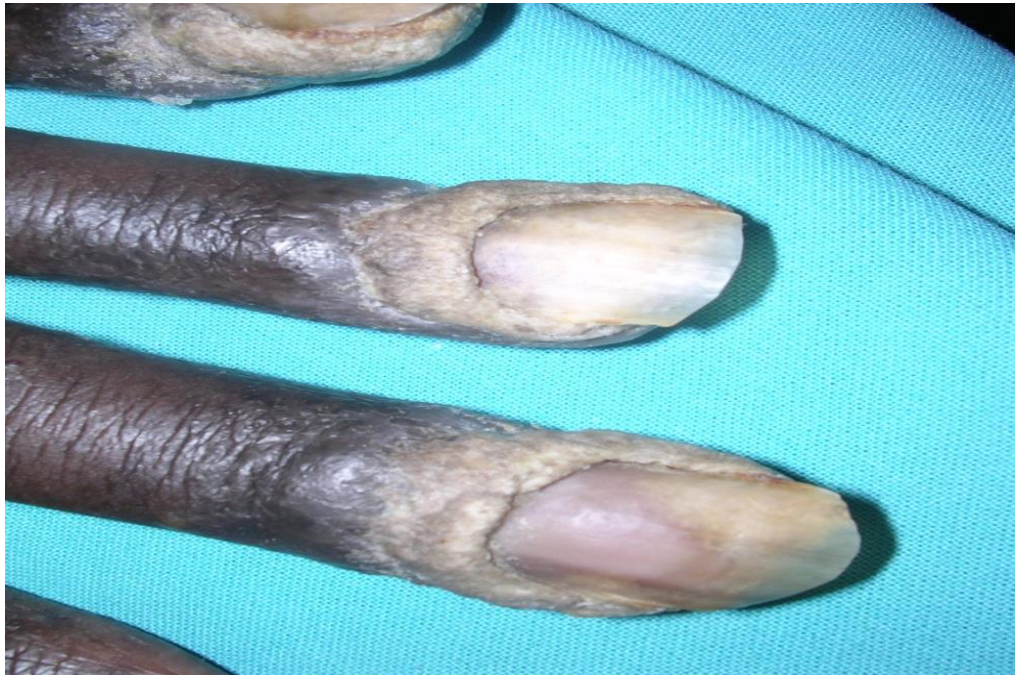
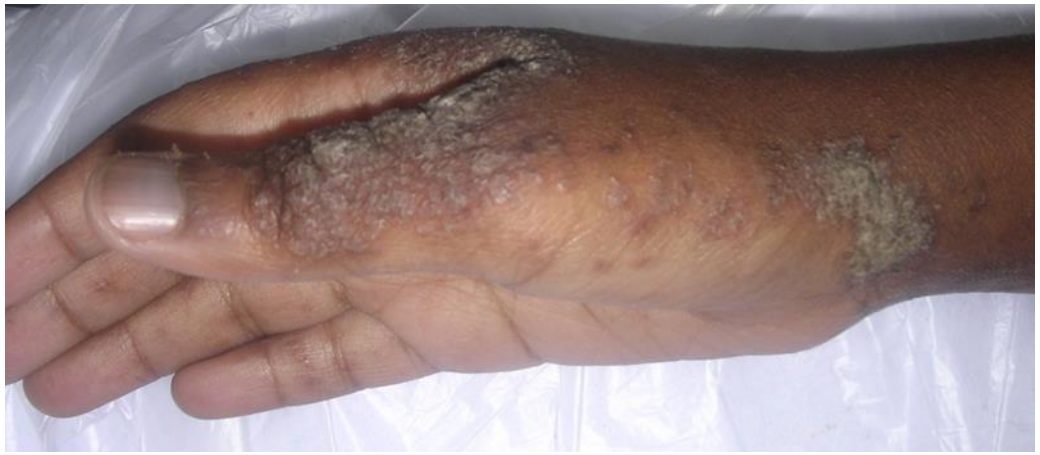
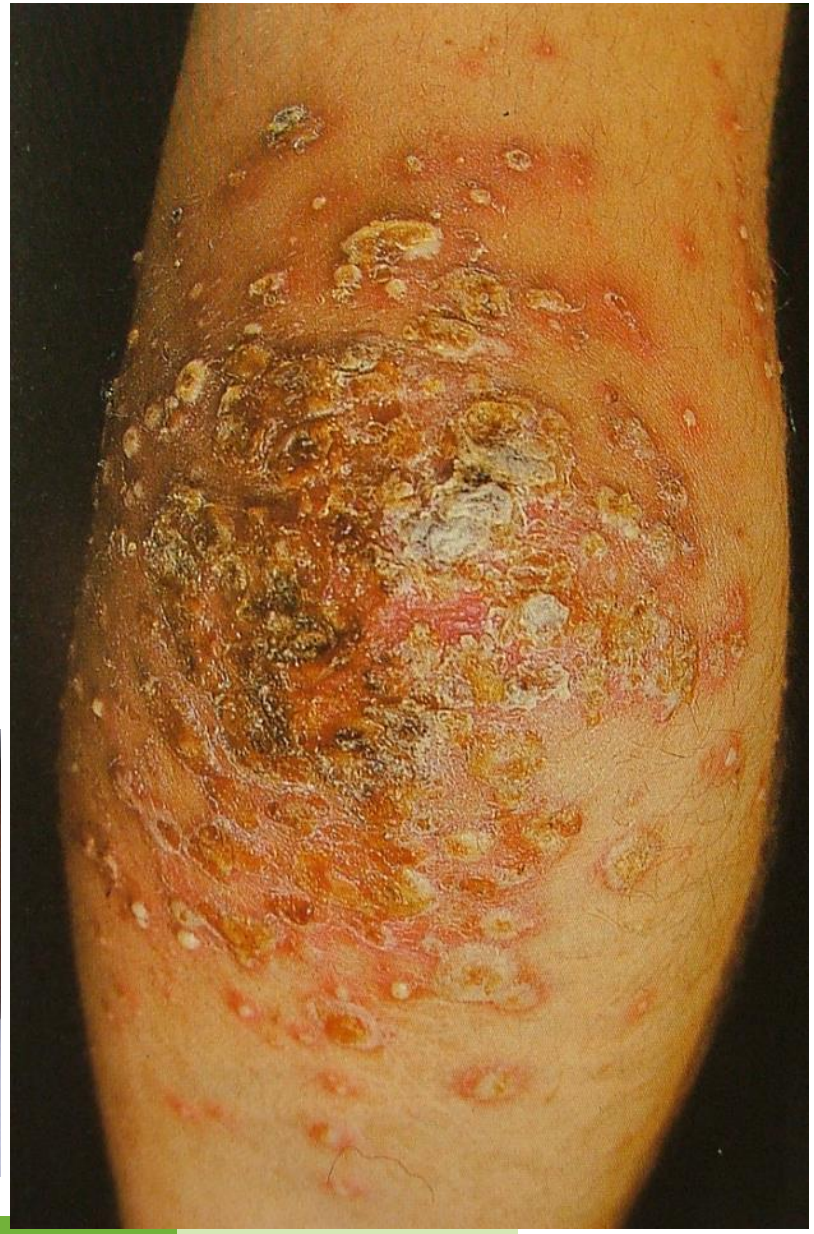
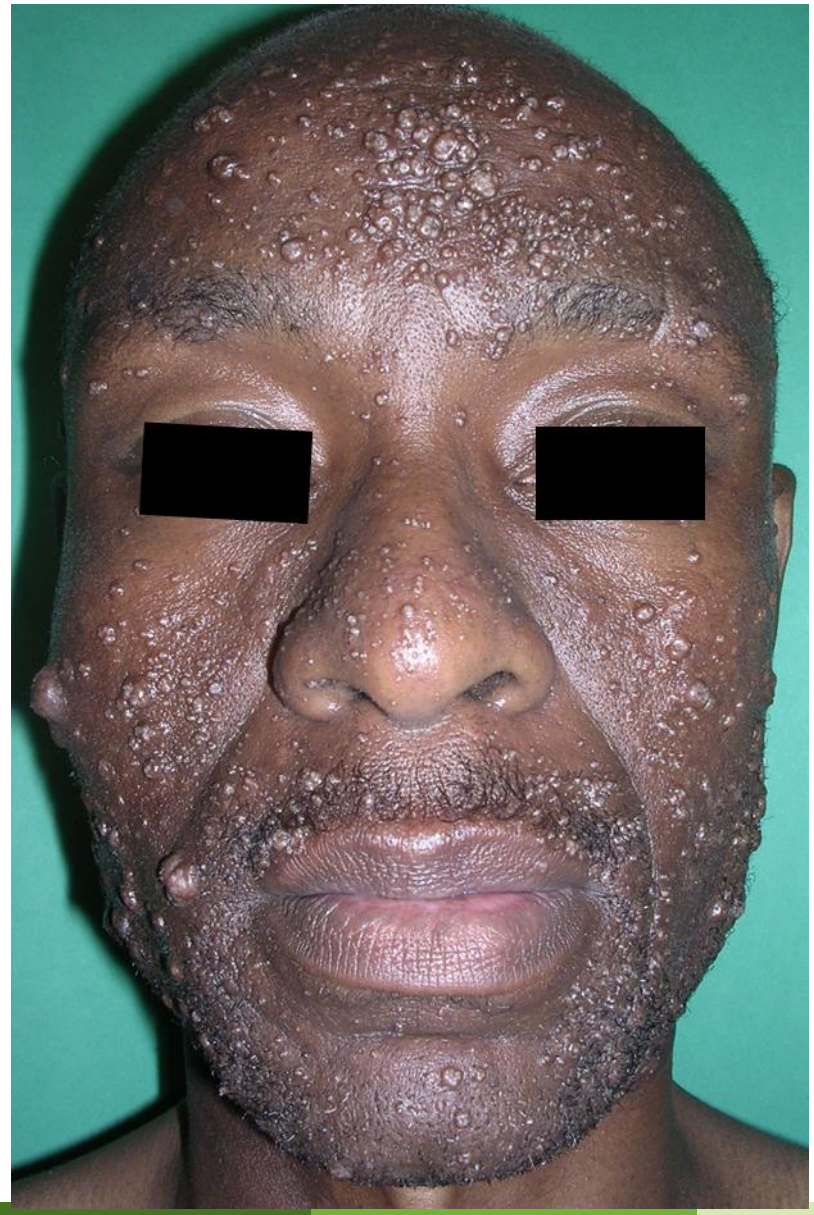


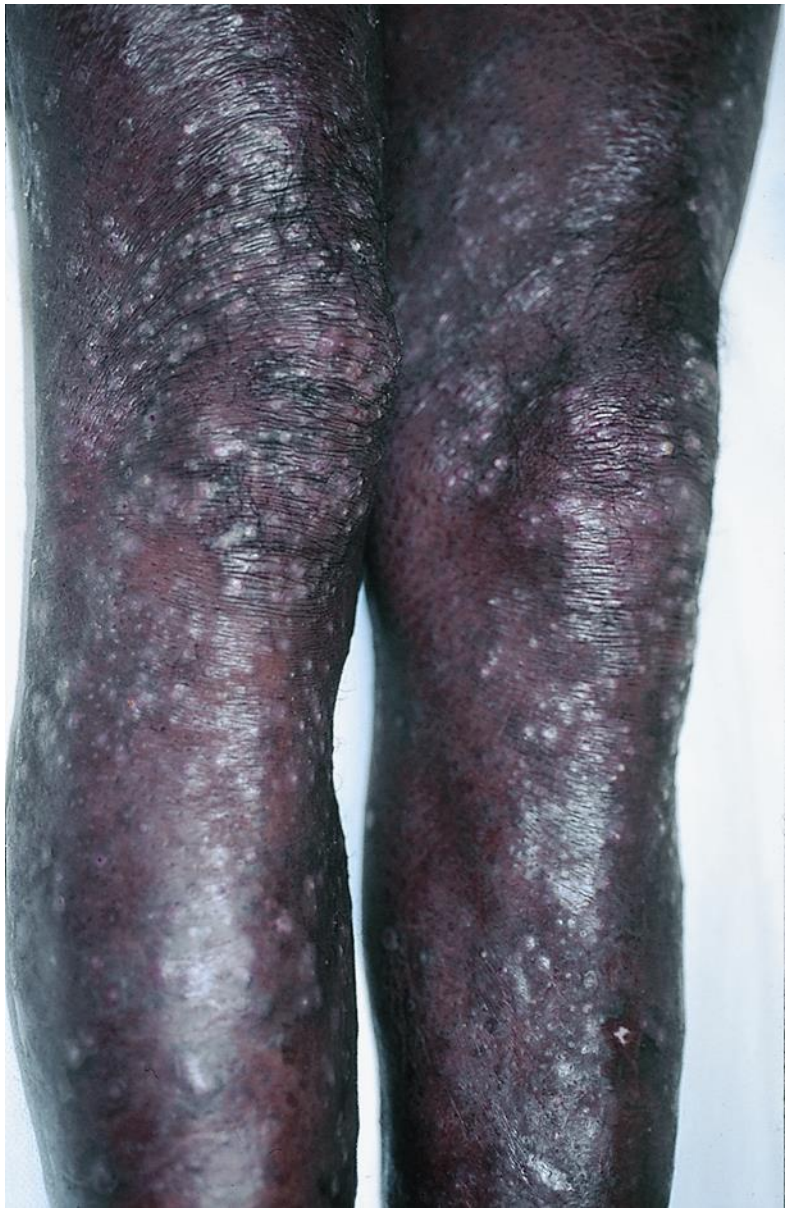




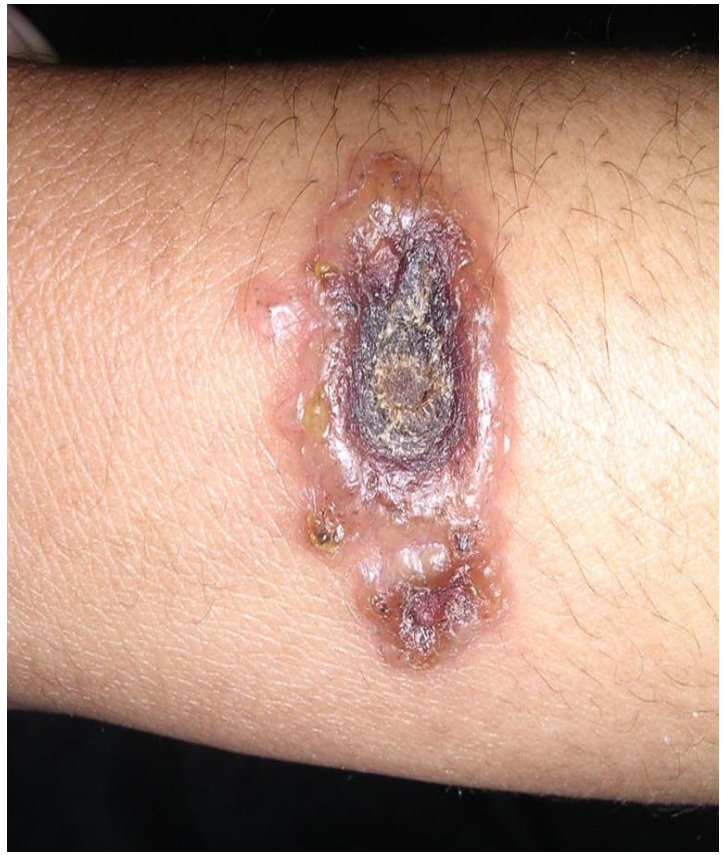
Molluscum Contagiosum

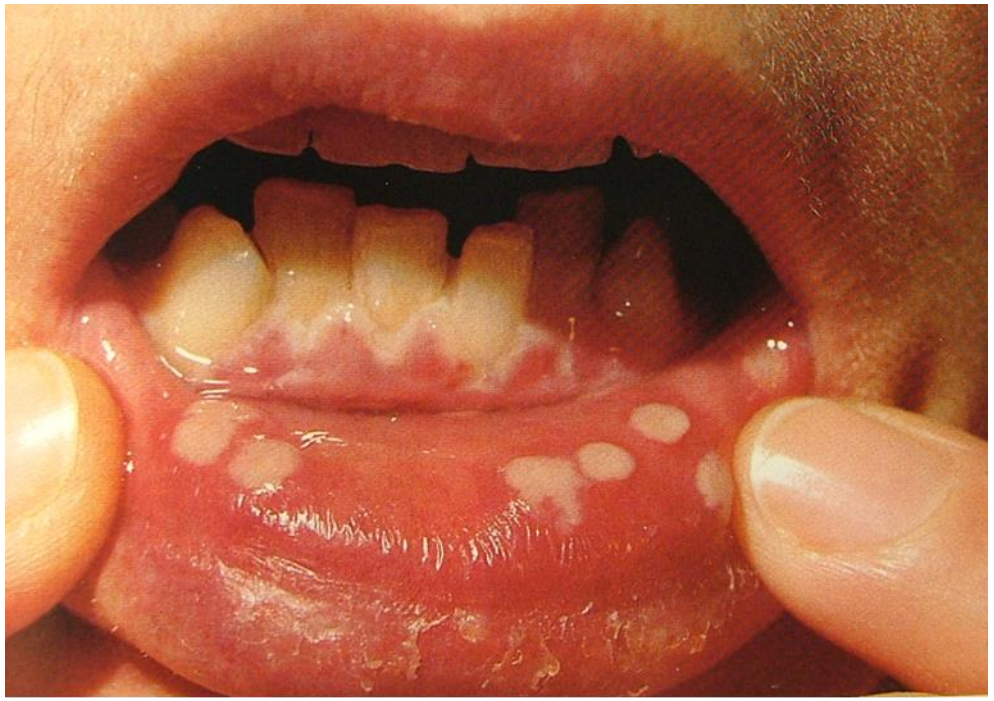


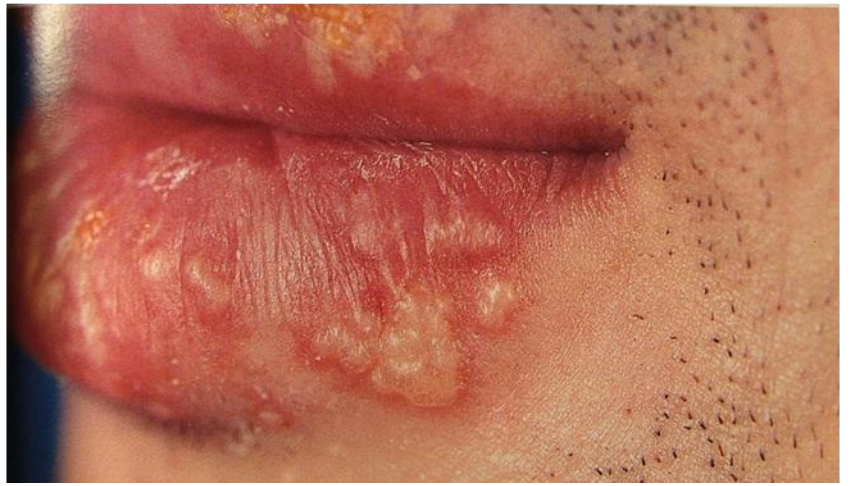
Papulonecrotic Tuberculid



HSV-1

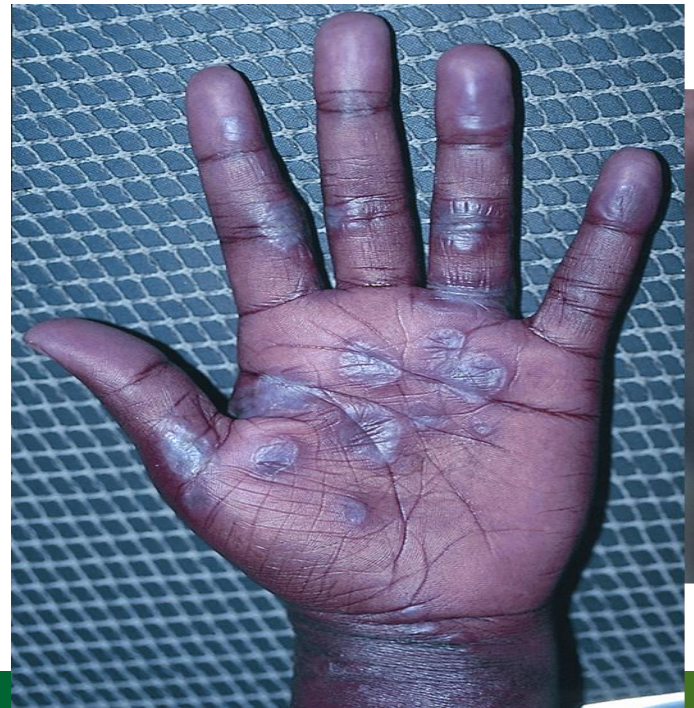


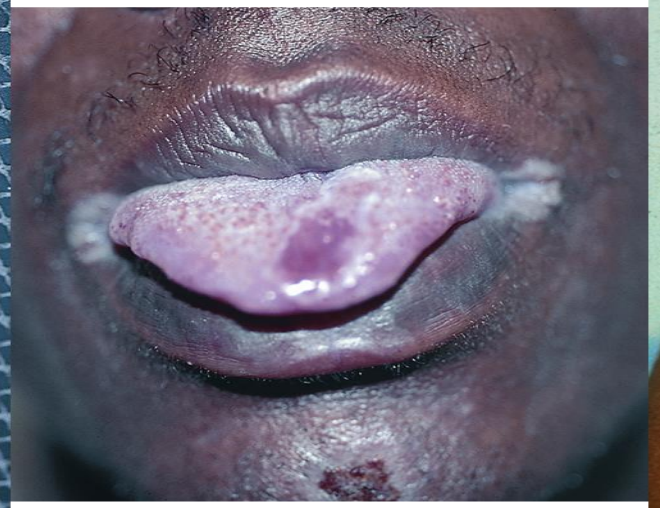


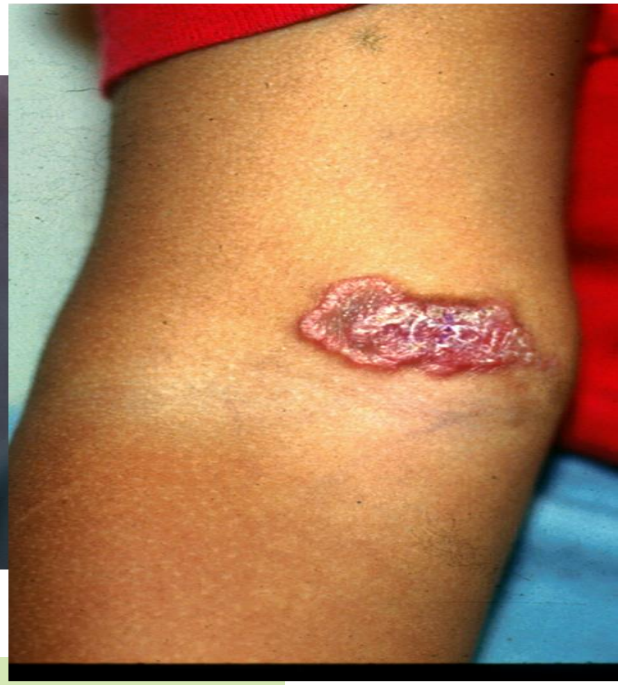


QUIZ 5: How would you treat our patient if he had these lesions: annular lesions on palms & arms, & snail track ulcers on the tongue?

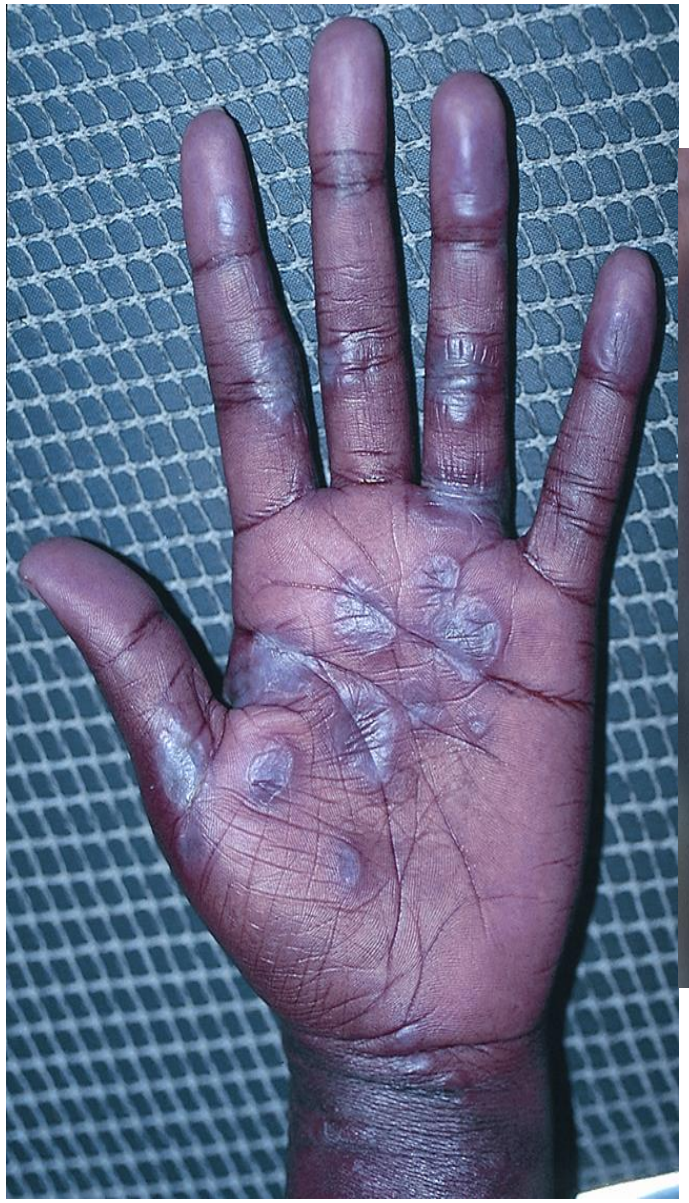
A. Steroids (oral only)
B. Steroids (oral and topical)
C. Antibiotics (depends on patient's allergy history)
D. Antifungals (oral and/or topical)

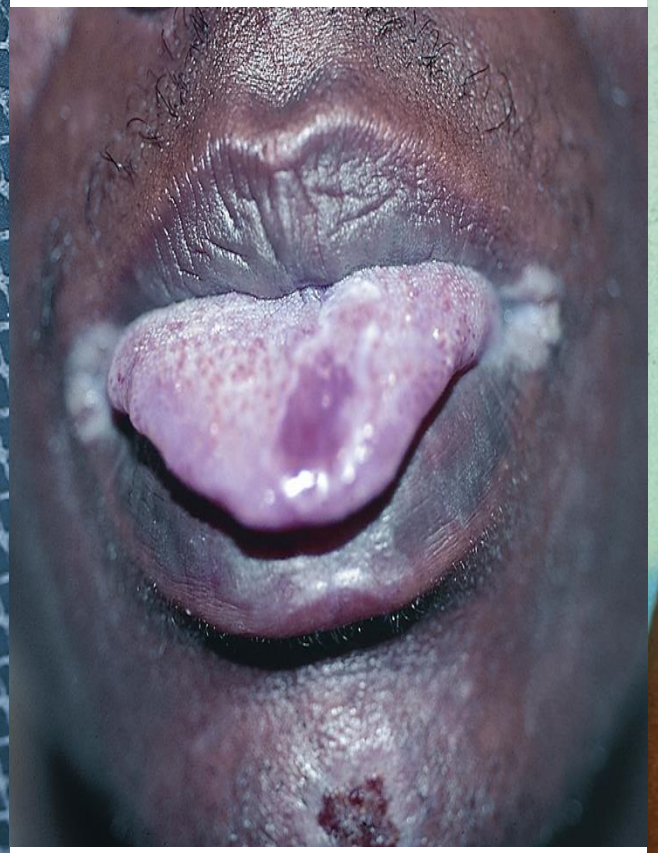


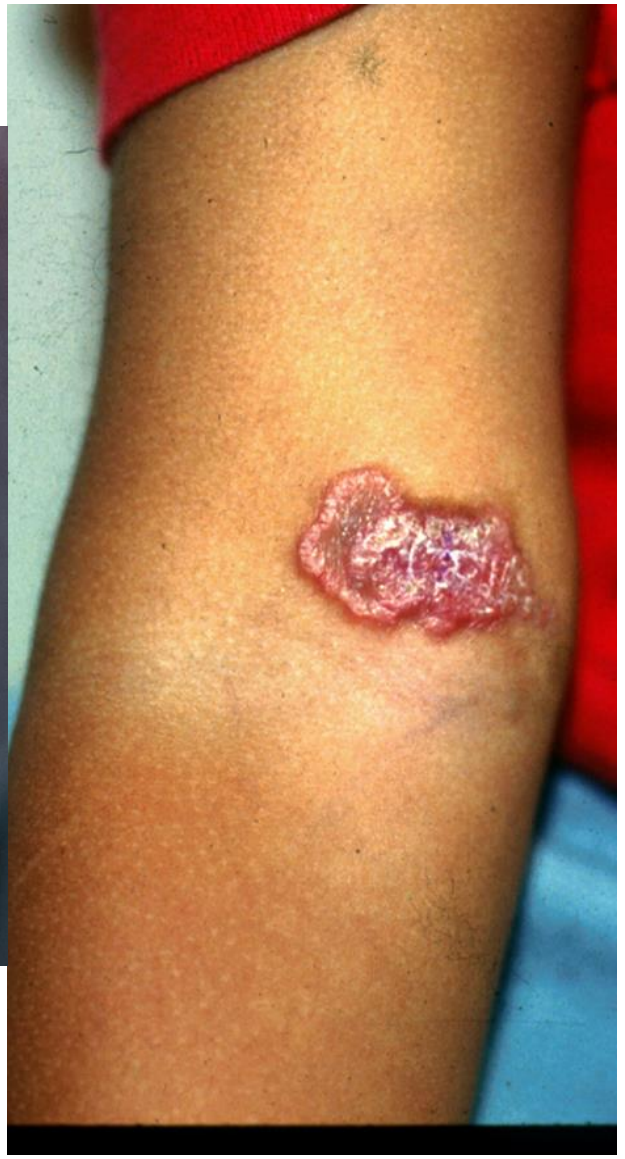




Secondary Syphilis



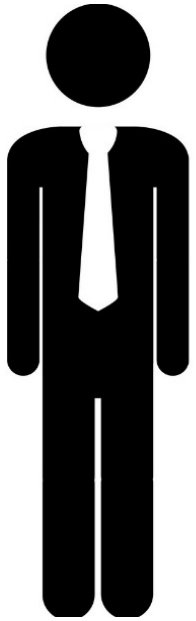




Then what?

- **Too many to cover**
- **Call a Dermatologist**
- **Call a friend**
- **Discuss with someone that knows (them)**

- **Make use of WhatsApp groups (HIV/TB or ID)**



35 year old man

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- Presents with
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  - Cough for 5 days → CAP (empiric) / ?PTB
  - Loose stools for 2 weeks → *Cryptosporidium*
  - Fever → multiple pathologies
  - Rash that has been there for a while → Secondary syphilis

Take home message

In Advanced HIV Disease, never stop investigating when you identify one opportunistic infection… There may be multiple!

References

- Knowledge Hub ACC webinars:
  - Approach to diarrhoea (Dr David Stead)
  - Cryptococcal meningitis (Dr Jeremy Nel)
  - Neurological problems in AHD (Dr Rosie Burton)
  - Management of the HIV-positive person with generalised symptoms (Module 2.5 A)
  - Management of the HIV-positive person with respiratory symptoms (Module 2.2)
- SAHCS clinical guidelines for hospitalised adults with AHD 2022
- Wits Reproductive Health and HIV Institute (Wits RHI)

health
Department:
Health
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PEPFAR
U.S. President's Emergency Plan for AIDS Relief

2030 NDP